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THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

SEPTEMBER
1948

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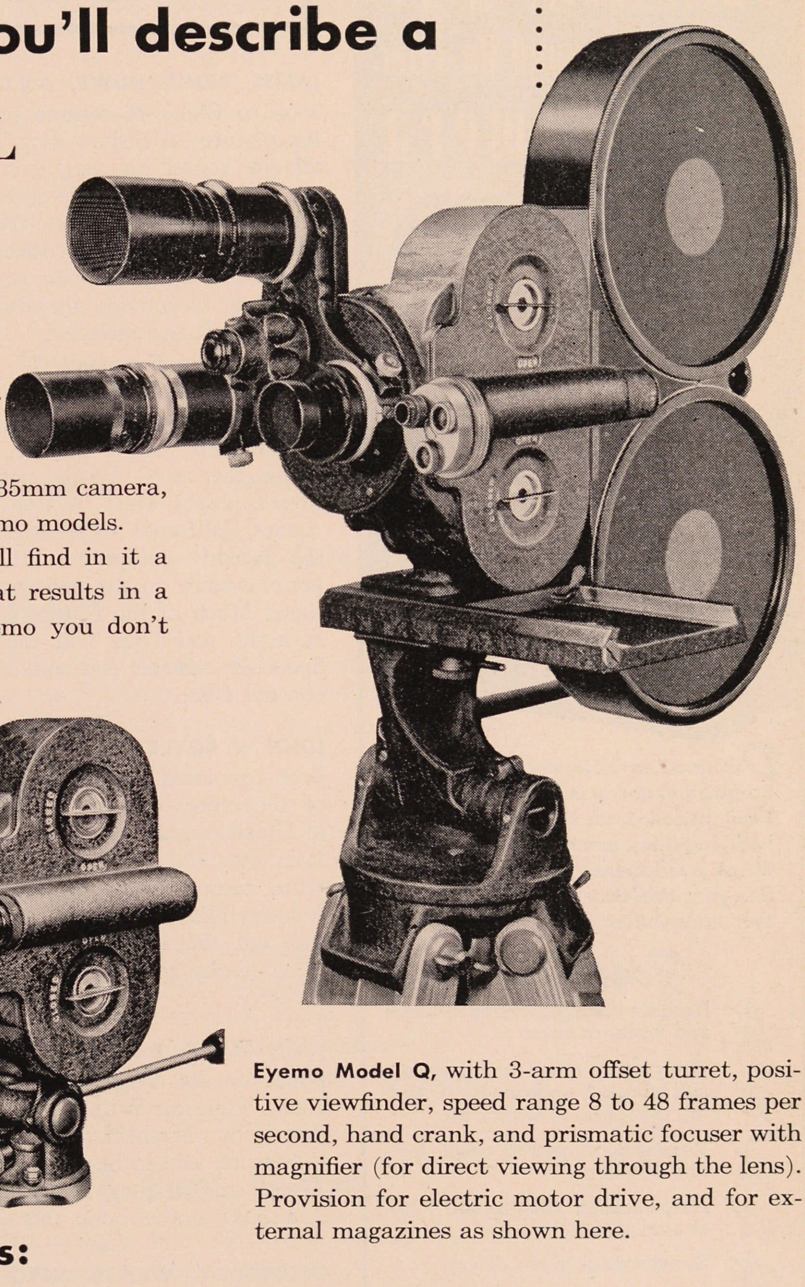

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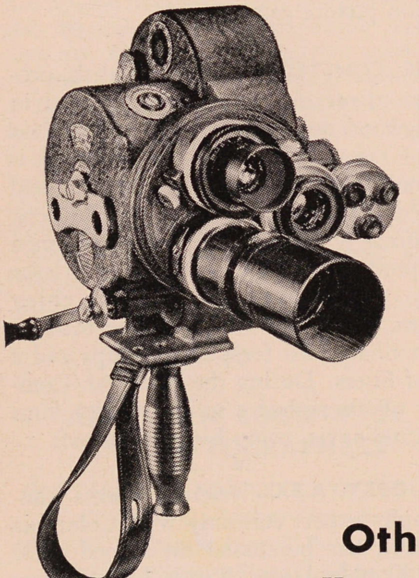

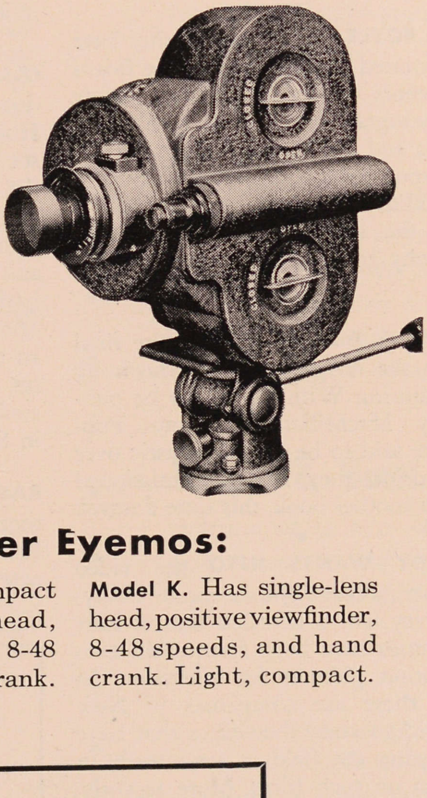

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Hollywood Bulletin Board

JAMES WONG HOWE, A.S.C., returning soon to China to resume production of his picture "Rickshaw Boy," will record all the sound on magnetic tape, using one of Len Roos' recently developed magnetic tape recorders. Tape used is specially treated 16mm. film. Howe will also carry along a compact portable 110-v generator to provide all power necessary for cameras and recorder.

•

IMAGINE, IF YOU CAN, a cinematographer hoping for clouds and fog instead of sunshine on a picture assignment. Well, that was A.S.C. member Elmer Dyer's prayer when he left recently for Arcata, California, to photograph in color the recently completed FIDO fog dispersal system on the government airport there. Much of the filming will be done at night, and Dyer will use two B & H Specialist cameras and commercial Kodachrome film.

•

JOHN W. BOYLE and Charles Rosher have been appointed a committee by the Board of Governors of the American Society of Cinematographers to work with Grant Leenhouts and Wells Root, producer and writer respectively, on the Motion Picture Industry Film Project short subject which will tell the story of the Directors of Photography and the camera craft in the industry.

•

JOHN ALTON, A.S.C., is putting the final polish on the script for his forthcoming book, "Painting With Light," to be published by MacMillan Company. Publushers are said to be so enthusiastic over Alton's script, they have commissioned him to do another book, this time a novel.

•

EVERYBODY WANTS INTO the video pictures act, according to a recent Hollywood survey which revealed that at least 51 companies have been formed there to make motion pictures for television. In addition, there are companies in New York, Chicago and other cities that have plans to enter the field or are already in production on such films. More recently, CBS signed with an independent producer for a series of 13 television shorts at a reported figure of $7,500 each.

•

GLEN MacWILLIAMS, A.S.C., who has recently become an independent producer of 16mm. business films, premiered his first production, "Forever Angler," in Hollywood recently. Film, sponsored by a leading manufacturer of sportfishing tackle, depicts the fishing sport from trout stream to deep sea and is noteworthy for its special microscopic sequence showing the treatment of fish eggs and hatching of young trout.

•

DEEPEST SYMPATHY is extended by all members of the American Society of Cinematographers this month to Norbert Brodine, whose mother passed away recently; to Leo Tover, whose wife passed suddenly last month after a lingering illness; and to the widows and survivors of Robert C. Bruce, one-time A.S.C. member who died of pneumonia a few weeks ago after returning from a location trip in Mexico, and Sam Landers, also a former member of the Society. Other notables called by death recently who were prominent in the motion picture industry were David Wark Griffith, and Edward H. Amet, inventer of the Magnigraph, said to be the forerunner of the motion picture camera.

•

OLLIE COMSTEDT, A.S.C., Swedish producer-director-cameraman arrived in Hollywood recently, bringing with him a set of rare zoom lenses, one of which is the only one of its kind in existence, and valued upwards of $12,000. While here, Comstedt will negotiate with cameramen and producers for use of his lenses on lease basis. Lenses may be used on either 16mm. or 35mm. cameras. One features an auxiliary lens for ultra closeups and a set of filters. During the past year, Comstedt photographed a series of color films in Scandinavia, using his zoom lenses.

•

RAY CORY, A.S.C., veteran process photography expert currently with Columbia Pictures, has purchased the famed 4400 acre Double-Arrow Ranch located near

(Continued on Page 324)

NOTICE
To All A.S.C. Members

The Society's second annual "Ladies' Night Dinner and Dance" will be held at the A.S.C. clubhouse in Hollywood Saturday evening, September 11th, at eight o'clock. It is to be a semi-formal affair and admission is restricted to members and their ladies. Invitations are now in the mail and prompt attention to the "RSVP" is requested.

☆

. . . tributes and billing

THERE ARE indications that some motion picture critics, at least, are not unmindful of the Director of Photography's contribution in the making of a successful picture. In this space in earlier issues we have pointed out the scant attention paid the cinematographer and his work by the average film reviewer. It is therefore a pleasurable surprise to find that during recent weeks, certain film reviewers have paid tribute to the artistry of cameramen on certain productions, although not all the cameramen are A.S.C. members, viz:

"Ray June's camera work is first rate throughout." (M-G-M's *A Southern Yankee*).

"The technical contributions are expertly accomplished, particularly the photography of John MacBurnie." (Republic's *Marshall of Amarillo*).

"And surely Gabriel Figueroa's breathtaking work cannot be overlooked this coming March at Oscar-time." (Steinbeck's *The Pearl*).

It is also interesting to note, especially in light of what was written here last month, that in a 2-column display advertisement in a Los Angeles daily newspaper, which announced the Mexican film, *Rio Escondido,* cinematographer Figueroa's name received equal billing with that of Emilio Fernandez, the director.

This is a precedent that could well be emulated by American producers and exhibitors. It is just possible that the American public, too, is well aware of the fine work of certain of our Directors of Photography, and that it is an added incentive to see their pictures when the names of the cameramen also appear in the billing.

★

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VOL. 29 SEPTEMBER • 1948 NO. 9

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ON THE COVER

WILL 9-year-old Mary Clarke, daughter of A.S.C. president Charlie Clarke, one day become the first woman director of photography? With the technical assistance of her illustrious dad, Mary, who is an avid 16mm. movie maker, focuses her Filmo for a closeup of Mark Stevens. Stevens stars in "Sand" which Clarke is currently photographing for 20th Century-Fox.

AMERICAN CINEMATOGRAPHER, established 1920, is published monthly by the A. S. C. Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. Entered as second class matter Nov. 18, 1937, at the postoffice at Los Angeles, Calif., under act of March 3, 1879. SUBSCRIPTIONS: United States and Pan-American Union, $2.50 per year; Canada, $2.75 per year; Foreign, $3.50. Single copies, 25 cents; back numbers, 30 cents; foreign single copies, 35 cents; back numbers, 40 cents. Advertising rates on application. Copyright 1948 by A. S. C. Agency, Inc. AUSTRALIAN REPRESENTATIVE: McGill's, 179 Elizabeth St., Melbourne.

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Keeping up with PHOTOGRAPHY

Lens Standards

Three important new standards affecting the performance of the lens of a camera are described in an article by Irvine C. Gardner of the National Bureau of Standards in the July issue of *"Industrial Standardization."* These standards define the focal length of the lens in more exact terms than has been the case up to the present time and provide methods of designating and measuring apertures of photographic lenses.

The three new standards are part of a series being prepared by a committee representative of a wide variety of national technical and trade groups.

•

Color Analyzer

A new machine which can tell blue from blue and red from red has been developed by scientists working in Binghamton, N. Y.

An electric color analyzer so sensitive that it will detect color differences too small to be seen by the average human eye was announced recently by the Ansco Division of the General Aniline & Film Corporation.

The instrument can measure 1/100,000,000 of the light emitted by an automobile headlamp.

Production of Ansco color film for the armed forces prompted the need for such a device back in 1943, and it is expected to play an important part in cancer research on the basis of recent studies which indicate that blood changes color during progression of the disease.

Although designed primarily for photographic work, the instrument, known as the Ansco color densitometer, can be adapted to scores of other uses in many other fields such as measuring or matching colors in textiles, paints and dyes, and in medical research.

•

Lens Tester

Development of a precision camera for testing exact qualities of new lens formulas is announced by Bausch & Lomb Optical Company's research and engineering division. The new camera is used for testing all types of photographic lenses ranging from the tiny home movie to eight-inch focal length telephoto lenses.

•

Light Filter

A new filter which is fitted over photoflood lamp reflectors has been developed by the Acme-Lite Mfg. Co., Chicago. Tradenamed "Litefilter," the device is said to filter out destructive yellow and red light rays. By its use the color and character of the light is changed without reducing light intensity.

•

10 By 14 Ft. Filter

The greatest number of scenes involving simultaneous interior and exterior action ever filmed for a single Technicolor motion picture are now being photographed for Warner Brothers' "The Younger Brothers" by Director Edwin L. Marin and William Snyder, A.S.C., through use of a large 10x14-ft. neutral density plastic filter.

This filter, which won the 1947 Academy Award for scientific and technical achievement for its developer, James Gibbons of the Burbank studio's prop shop, is designed to decrease exposure without color correction through cutting down brilliant sunshine to match ordinary interior lighting for Technicolor.

First use of the screen for Technicolor was introduced by Sid Hickox, A.S.C., for scenes for "One Sunday Afternoon," and Marin and Snyder are first to adopt it as part of standard production equipment.

•

Positive Sound Track

Kodak Research Laboratories, in a recent Monthly Abstract Bulletin, reports acquisition by Kodak of a patent covering a method for producing a positive sound-track by printing from a negative sound track onto a multi-layer photographic film that is processed by reversal. Improved sound reproduction is said to be thus obtained.

According to the method, the sound-track is printed from a negative, the picture areas of the film are exposed as usual to a scene or positive image, and the film is developed in a normal black-and-white developer to produce negative silver images in the picture area and a positive sound-record in the sound-track area. The sound-track area only is then fixed by edge application of a special hypo bath. The film is then washed. The film continues through its regular processing course for the production of reversed images in the picture area by selective re-exposure and color-development. It is then treated in a ferricyanide bromide bleach bath to convert the silver images in both picture and sound-track areas to silver halide.

The film is then treated in a dilute hypo solution for from 30 seconds to 2

(Continued on Page 325)

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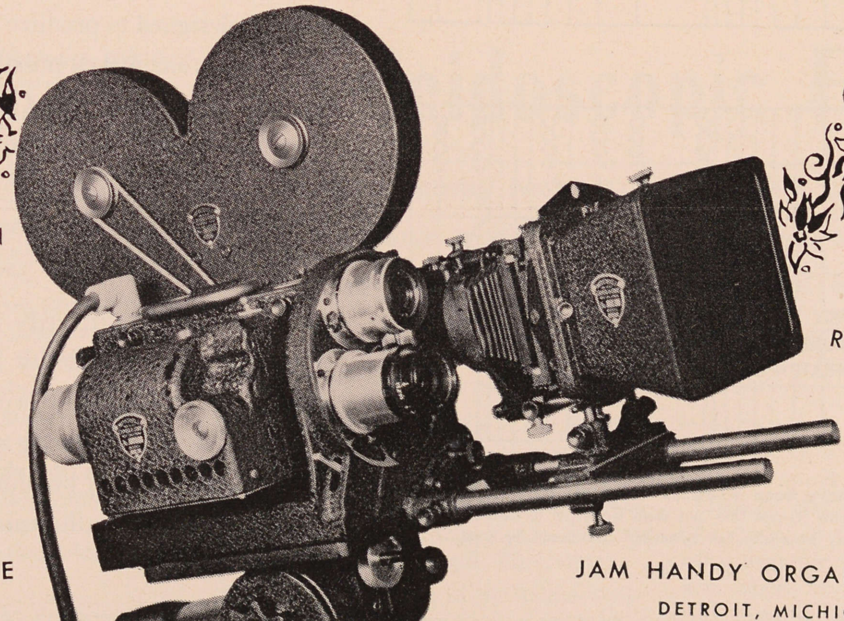

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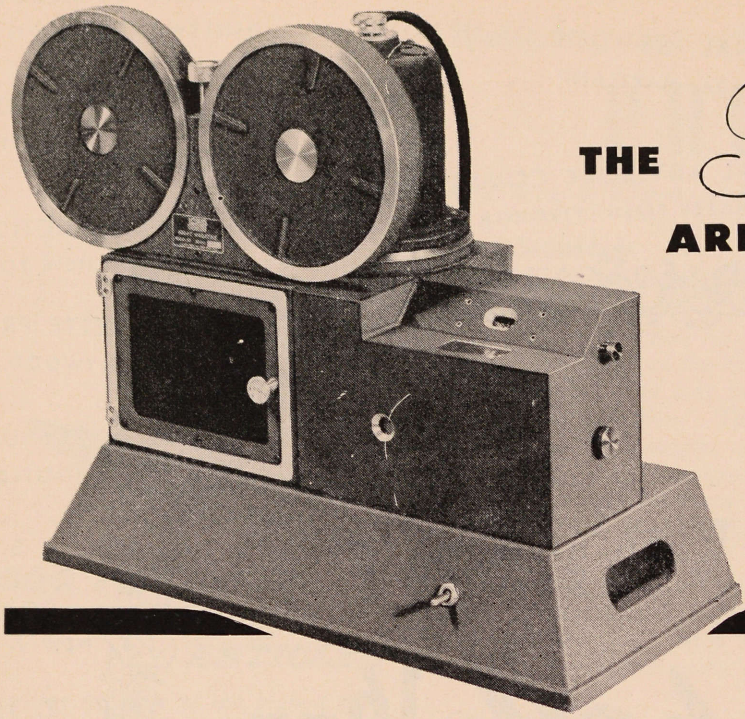

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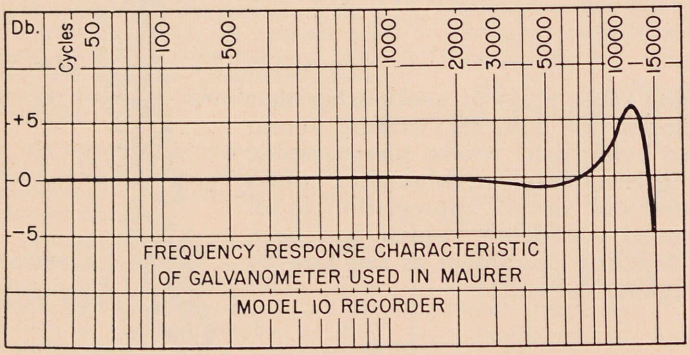

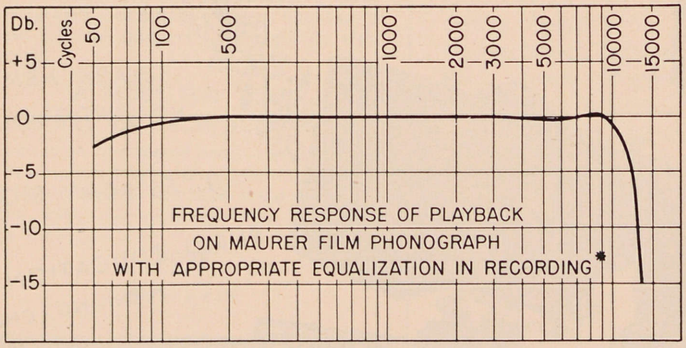

*For those who may have been educated to believe that such a result is not possible with 16-mm film, we shall be glad to demonstrate that it is not only possible, but practical commercially now.

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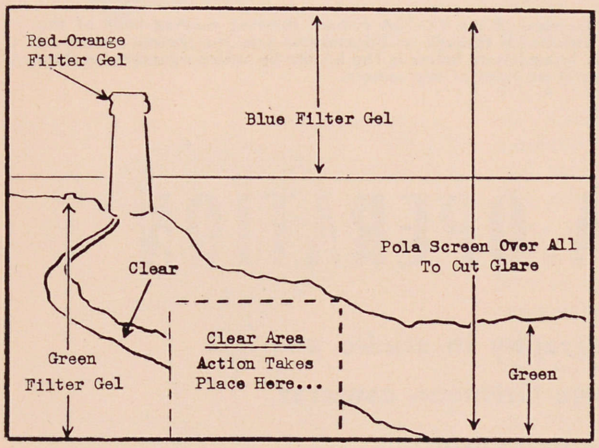

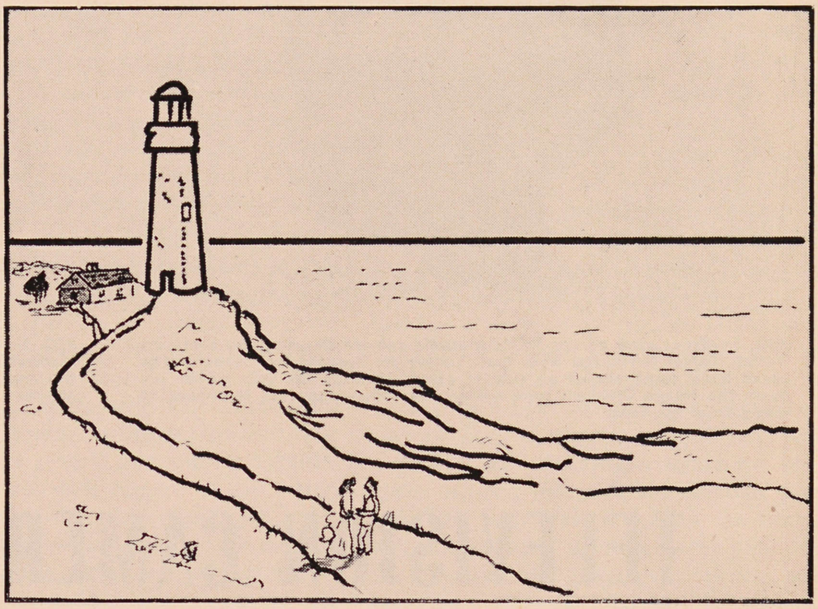

ABOVE SKETCH represents an approximate scene which author was called upon to photograph in color. Good color was lacking in the scene, however—the sky was dull and there was considerable glare from the sea and the foreground, too, was virtually colorless. Employing his "kaleidoscopic filter" technique, Fernstrom placed before the camera lens a composite filter which enabled him to "paint" color into the scene by shooting through colored gelatins. How the gelatins were arranged to form the composite filter is illustrated in diagram at left.

Kaleidoscopic Filters

A new economy technique that puts color into scenes where none exists and affords the cinematographer greater control over color and exposures.

By RAY FERNSTROM, A.S.C.

WITH ECONOMY the keynote today of every motion picture production operation including cinematography, every cameraman is digging down deep into his bag of tricks in order to cut corners and do his bit to shave production costs. One of the expense items of color productions that can be materially reduced if not eliminated entirely is that of putting color in large expansive scenes where none existed before, in order to obtain a pleasing over-all color balance in the scene. Instances are common where virtually acres of an exterior location have had to be sprayed with green paint in order that they might register properly on Technicolor or Cinecolor film. Fences have been painted and houses and barns tinted or subdued in order to satisfy the color technician's critical eye.

There is a simpler way to do this that will eliminate the need for spray painting or at least reduce its application to an area only a few square feet in extent. Also, this method enables a wide new range of lighting control over exterior scenes, even for black and white photography.

Before the war, I wrote an article on the subject of "Motion Painting" that appeared in THE AMERICAN CINEMATOGRAPHER in which I described the use of graduated N.D. filters and pola screens in shooting color. What follows here will enlarge upon that technique and develop what I term Kaleidoscopic Filter shots.

Peering through one of my kaleidoscopic filters would suggest a view through a kaleidoscope with its multicolored pattern made up of a myriad of transparent colored pieces of celluloid of assorted shapes and sizes. Here, however, the resemblance ends, for the kaleido filter's colored gelatins are arranged in a predetermined pattern and have as their purpose the function of imparting color in a scene where none exists, to correct a flat or over-brilliant sky, or to subdue glare from an expanse of water—or all three.

Briefly, the kaleidoscope filter consists of a panel of clear optical glass of a size to fit over the front of the camera's matte box where it is fastened securely. With this glass in place the camera is racked over to permit viewing the scene through the lens or viewfinder and, of course, through the panel of clear glass. The desired composition is selected and the camera locked in position. Now using a fountain pen, the areas on the glass to be covered with sections of filter gelatins are

(Continued on Page 319)

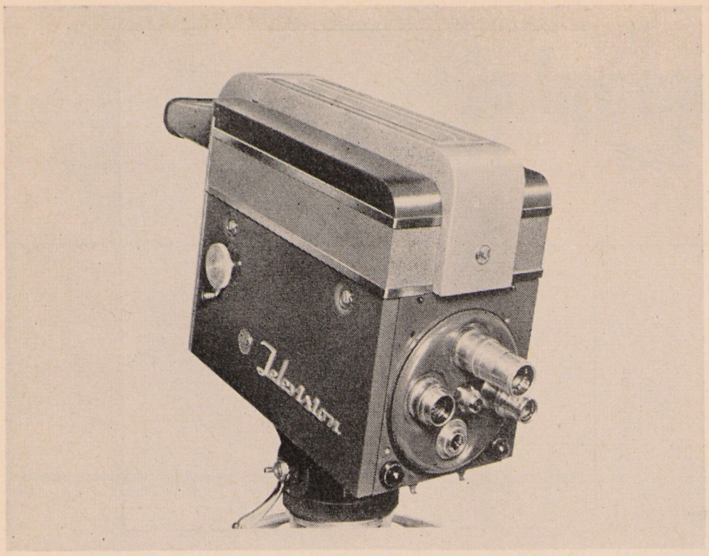

FIG. 1—Front view of the TK-10A studio camera showing the four-lens turret. Turret is rotated from rear. Lenses are focused by means of the small hand crank shown on side of camera toward the rear which adjusts the Image Orthicon tube within the camera, moving it toward or away from the lens.

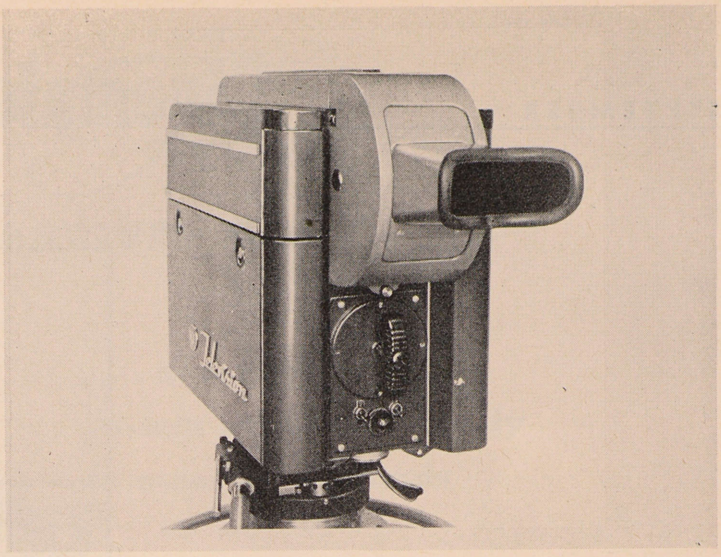

FIG. 2—Rear view of the TK-10A camera showing viewing hood of the electronic viewfinder through which operator sees the picture output of his camera. Immediately below is the handle by which operator revolves the lens turret on front of the camera.

TELEVISION CAMERA OPERATION

A brief discussion of television photography in studio and remote operations, using the new Image Orthicon cameras, and its comparison with cinematography.

By HERMAS I. SMITH

Don Lee Broadcasting System, Hollywood

ACTUALLY, what is involved in operating the television camera during a telecast? What comparisons, if any, can be made to the operation of conventional motion picture camera equipment? Before discussing these questions, it might be well to describe briefly the two Image Orthicon cameras, type TK-30A and TK-10A which have recently been made available to the television industry by RCA.

Both cameras are similar in size and general design. The TK-10A is designed for studio operations and is shown in Fig. 3. The TK-30A is generally used for "remotes" or on-the-spot telecasts where conditions may be adverse. It was designed for this type of service, although it has been successfully used in studio work. One of the principle differences between the two cameras lies in the type of Image Orthicon tube employed. The type 2P23 is used in the TK-30A, and type 5655 is used in the studio camera. The differences between these tubes centers primarily in their different color response curves, and in their sensitivity to light of different levels.

To make handling and maintenance easier, the cameras are built in two basic units, the camera proper and the electronic viewfinder. The camera section contains the pickup tube and associated electronic circuits. The viewfinder contains a five-inch picture tube and associated electronic components. The cameraman, looking into the viewfinder sees on the screen of its tube the picture output of his camera. As this picture is being transmitted to the camera control unit, the cameraman may obtain accurate focus and framing as well as monitor the picture quality.

A photograph of the opened camera is shown in Fig. 5. The left hand side of the case accommodates electronic deflection and high-voltage pulse supply components. The center section contains the pick-up tube, its yoke, focus, and alignment coils with associated mechanism. The right hand side of the camera case houses video preamplifiers and associated components. The entire assembled camera and viewfinder unit is shown as normally opened for inspection in Fig. 6. All electrical connections to the camera are made through one cable which plugs into the base of the camera at the rear. This cable terminates in the camera control unit which may be located quite a distance from the camera.

The Image Orthicon pickup tubes have a semi-transparent photosensitive surface on the inside of the tube face which is located to the rear of the camera lens. This area that is sensitized to light averages 1.6 inches in diameter. Since the television picture aspect ratio is 4:3, this gives a maximum average area to be scanned of approximately .96 by 1.28 inches.

The lens turret in the front of the camera is similar to that in a motion picture camera and accommodates four lenses. These may be rapidly switched into position by turning a handle on the rear of the camera. A micro-switch which is built into this handle automatically cuts off the picture during the interval the turret is revolving. Lens changes are made while the camera is "off the air" during the period when the output of the companion camera is being used. Otherwise "on the air" the lens switch effect is not pleasing to the viewing audience.

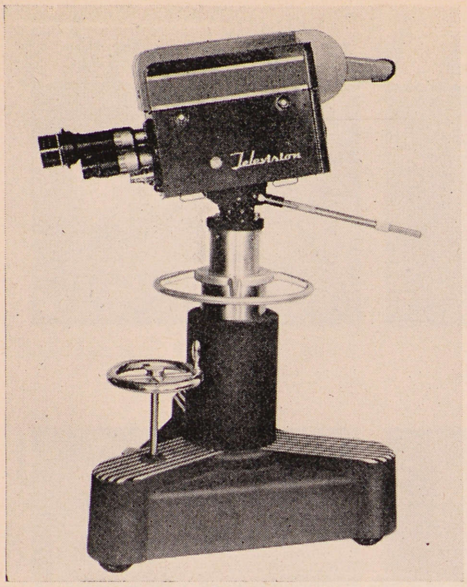

FIG. 3—TK-10A studio type television camera mounted on latest type studio pedestal.

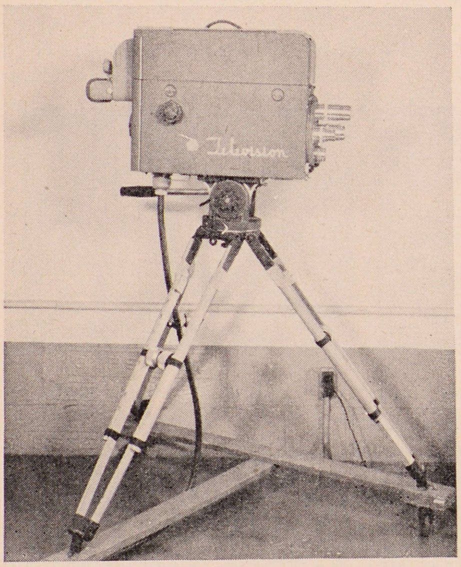

FIG. 4—The TK-30A field camera on tripod and dolly. Tripod provides easy panning as well as elevation.

The turrets of these cameras are designed to accommodate the series of Eastman Ektar lenses normally supplied for use with the Kodak Ektar camera. A wide selection of focal lengths is available which includes the Ektar 35mm, 50mm, 90mm, 135mm; also used are the RCA 8½-in., 13-in., 15-in., 17-in., and 25-in. lenses. These give the cameraman a range of horizontal lens angles ranging from 50° to about 2°, depending upon the area of the mosaic being scanned. Almost any good quality photographic objective may be adapted for use with the RCA television camera provided a satisfactory mount is designed which will fit the turret.

Focusing may be accomplished in two ways. The lenses on the turret may be individually pre-set for scenes they are intended to cover. Thereafter, the focus may be corrected through use of the main focus control on the side door of the camera, which moves the Image Orthicon tube assembly on a rack and pinion forward and backward with respect to the turret. The advantage to prefocussing the short focus lenses on their individual mounts is that changes may be made from one lens to the other without refocusing the main focus control. The long focus RCA lenses, for example, the 17-in. and 25-in., have no provision for focusing at the lens mount. With these lenses, the cameraman uses the main control knob for focusing.

Two of the most commonly used accessories in routine television camera operations are the cameraman's cue headset and talk-back, and the viewfinder hoods. The TK-10A camera is supplied with a straight-on type hood, as shown in Fig. 2, which may be corrected for a considerable range of camera tilts. The field camera TK-30A comes with two different hoods, a straight-on type and a periscope type which may be inverted depending upon camera elevation. This type comes in handy during "remotes" where last minute changes may occur in camera placement. Both hoods are light in weight and easily interchanged. As for filter holders and lens shades, standard Kodak series VI attachments with appropriate adapter rings fit the Ektar lens series. The RCA telephoto lenses are supplied with metal telescoping hoods. A 16mm. slide film sign projector as well as numerous other accessories are available for use with these cameras.

Field, or "remote" telecasts are quite different from those originating in the studio. In the first place, the cameraman deals with unrehearsed action. Secondly, the control over many aspects of the production, including lighting, is not the same as is found in the studio. The camera positions are established on the basis of existing facilities. The cameraman may be located in a box seat at a symphony concert or atop a theatre marquee, for example. When shooting a television program subject, the program director provides the technical crew with the necessary information as to general plan for the telecast, the program sequence, and areas he wishes covered by the cameras. From there, the engineers set up the technical facilities, and the cameramen prepare the cameras for operation.

The question is often asked, "How is proper exposure determined for the camera?" Since the camera tube is scanning the image at the rate of 30 frames per second, the cameraman has this factor with which to work. It is difficult to establish any fixed rule at this time since the 2P23 pickup tubes are not all uniform in their sensitivity to light level and color, especially red. When working with high levels of illumination, the lenses can be stopped down to the approximate values

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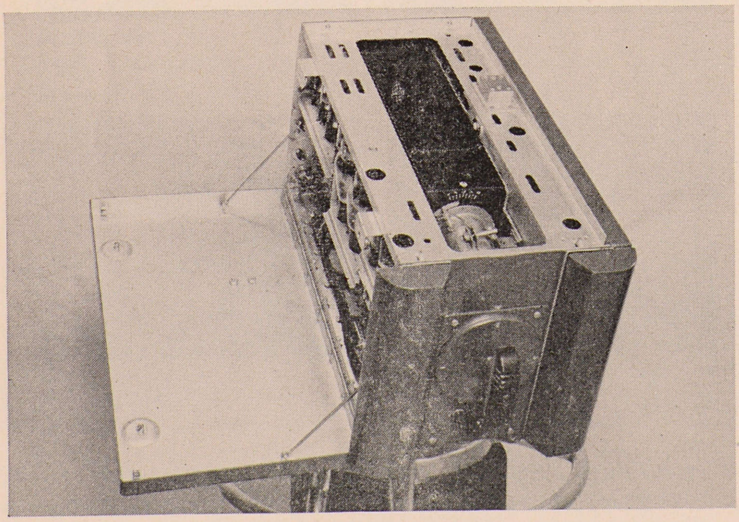


FIG. 5—The studio camera with electronic viewfinder removed and left side opened to reveal the electronic deflection and high-voltage pulse supply components. Center section contains the pickup tube, its yoke and focusing mechanism.

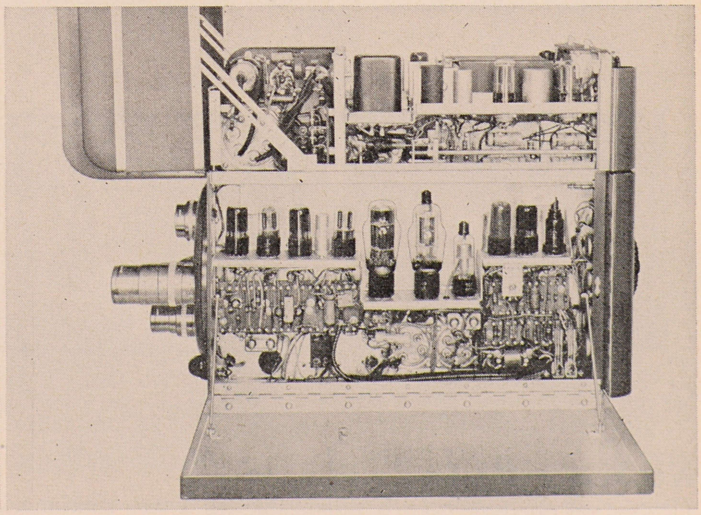
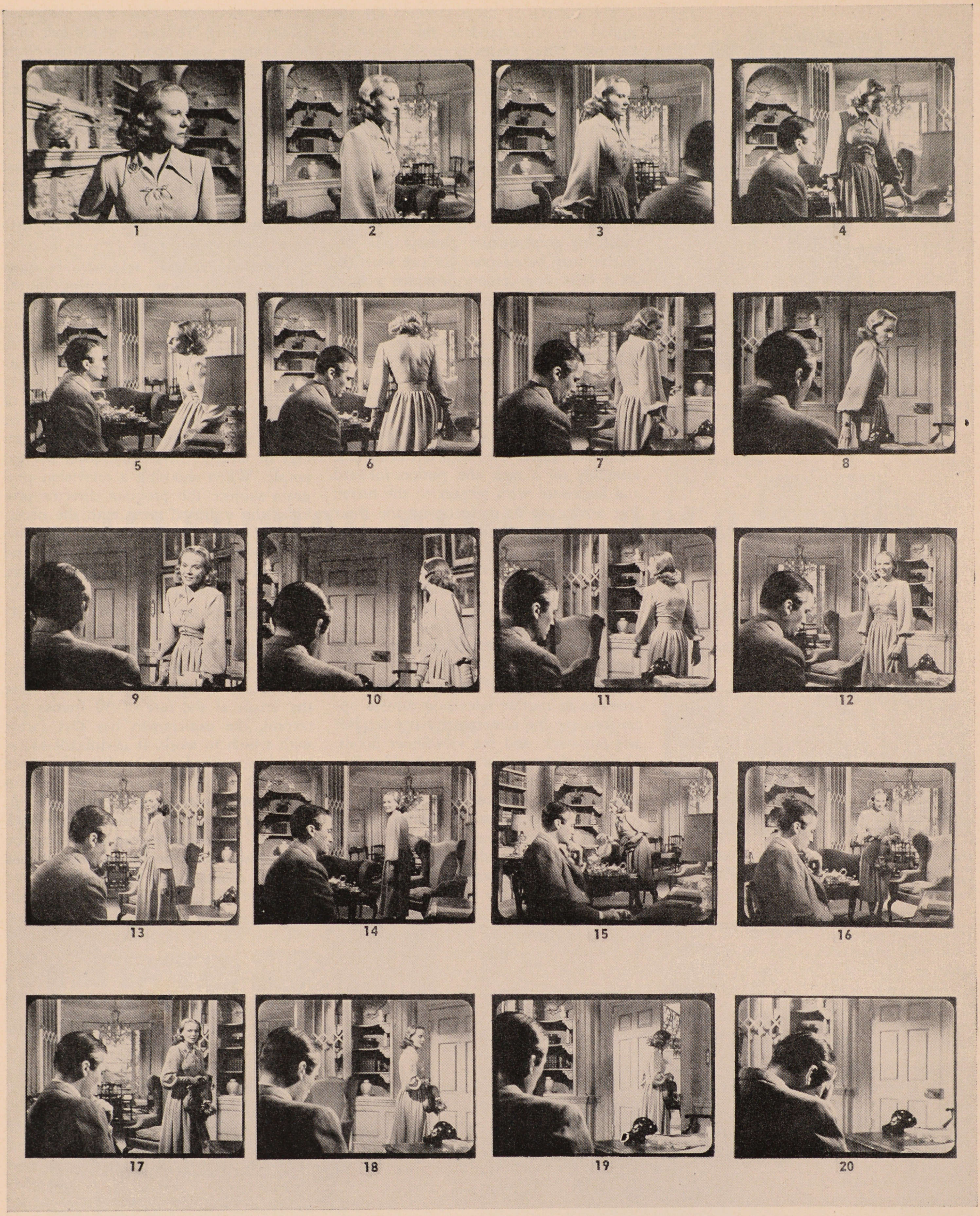


FIG. 6—Same camera viewed from left side and with viewfinder in place but with hood raised. Viewfinder is actually a miniature television receiver showing operator the exact image and image quality being picked up by camera lens.



ROSIE'S DOLLY . . .

pictured on opposite page, is responsible for a new continuous long-scene technique, which makes it possible for the actors to put some real theatre into their portrayals. Frame enlargements above illustrate new technique. Note how camera moved in and out, at same time changing angles, giving variety to the viewpoint. Scene, which screens for 3½ minutes without a single cut, features Gregory Peck and Ann Todd, stars of David O. Selznick's "Paradine Case," directed by Alfred Hitchcock and photographed by Lee Garmes, A.S.C.

Three And A Half Minute Take...

How dramatic continuous scene in Hitchcock's "Paradine Case" was photographed by Lee Garmes, A.S.C., using new multi-directional camera dolly.

By BART SHERIDAN

UNSHACKLING the camera and giving it mobility, contends Alfred Hitchcock, is a requisite for effective screen drama if the dramatic film is to ascend new heights. Too often in the past — and even today — he believes, a good dramatic picture is hampered by too frequent cuts, not enough continuous action. And to back up his contention, Hitchcock offers the "Paradine Case" as exhibit A in which he has applied the "continuous take" idea to the "frustrated lover" sequence. The scene runs 3½ minutes on the screen without a single cut.

A condensed version of the scene is pictured in frame enlargements from the film reproduced on the opposite page. The scene was shot in this manner because Hitchcock and Director of Cinematography Lee Garmes, A.S.C., felt that its particular dramatic quality would be jeopardized by a succession of cuts; also, Selznick's head grip, Morris Rosen, had recently devised a new kind of camera dolly which would give the motion picture camera a new freedom of mobility, and this dolly offered for the first time the means of shooting a continuous take and at the same time afforded all the variety of viewpoint that ordinarily would be achieved in a succession of takes made with the camera in different setups and at different angles.

Heretofore all camera dollies have had to run on tracks, like trains, and beyond certain limits the tracks would get into the picture. Furthermore, the ordinary dolly could only move in a straight line. Rosen's dolly rests on four fully-swivel cushion-tired wheels and is noiseless in operation. It carries the camera not only in a straight line, but around corners and at an infinite number of angles. The camera handling is such that the actors can move freely back and forth across the set, as they might on the theatre stage.

The "Paradine Case" is a behind-the-scenes love drama of the English law courts. The long take sequence is enacted by Gregory Peck and Ann Todd. Peck, who plays an English barrister, has permitted his home life to be upset by a weird infatuation for Valli, a beautiful client whom he is defending on a murder charge. In this long scene Miss Todd, who appears as the wife, confronts Peck with her knowledge of the infatuation and taunts him about his self-produced mental torture.

For the players to indulge fully the dramatic scope of such a situation four prerequisites were needed: 1) enough time for Miss Todd to work up a good "mad," 2) freedom of movement for the players, 3) a chance for the audience to watch both principals uninterrupted by cuts, and 4) enough visual variety within the scene to avoid any hint of monotone.

To provide them Hitchcock and Garmes decided on the continuous-scene technique. Miss Todd opens the scene by speaking to Peck as she stands at a mantle at one side of the room. Still talking, she walks to the center of the room where Peck is sitting motionless. The camera pulls back and pans with her, then trucks forward to show a semi-closeup from a slightly different angle. They talk briefly, then she leans back on the table, rises, walks around Peck's desk and talks directly into the camera, which has meanwhile swiveled around behind Peck. Laughing sarcastically, she pirouettes away from Peck's desk, talks again, then marches deep towards stage rear to pick up her hat and coat, the camera again trucking and panning to keep focus and perspective in order. Finally she crosses the room again in front of Peck and closes the door to leave him in solitude.

The big advantage gained artistically is the simulation of stage continuity and the chance for the players to put some "good theatre" into their presentations instead of having their words and actions strung together piecemeal in the cutting room.

In the normal or non-Hitchcock directed motion picture, this scene would be photographed in at least 10 and possibly 15 different set-ups. The first setup would be a closeup of Miss Todd from which she would exit to camera right. The second would be a closeup of Peck and Miss Todd entering from camera left to make a two-shot. The third would be a standard two-shot

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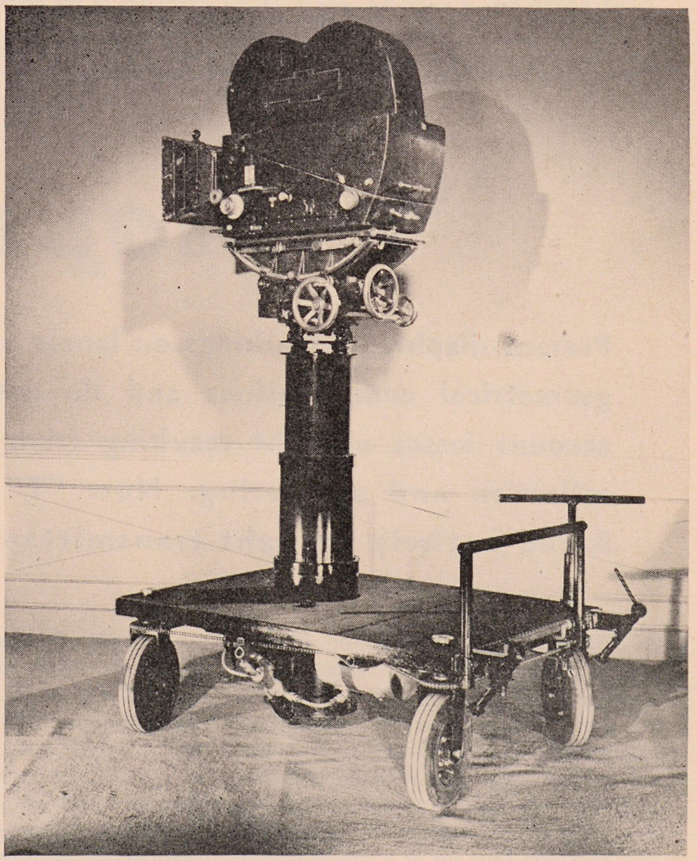
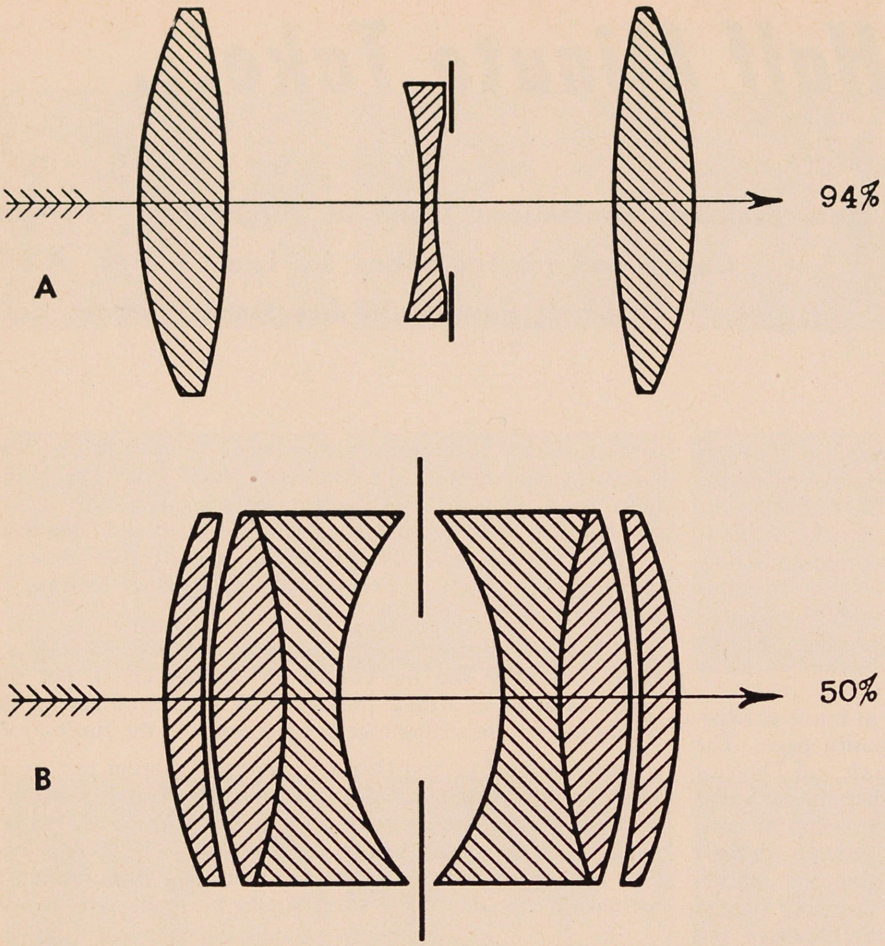


DUBBED "Rosie's Dolly" in honor of its inventor, Morris Rosen, head grip for Selznick, this unique all-angle camera dolly was nominated for an Academy award, affords a method of getting dolly shots without crane, boom or tracks. Camera post may be elevated to a maximum of four feet. All four wheels pivot and enable camera to circle an actor in complete closeup coverage in a limited area.



ILLUSTRATED here is a striking example of the inadequacy of the present f/stop system, based on computations made in Bell & Howell laboratories. It was found, for example, that the 3-element, coated lens (A) will transmit 94% of the light, whereas the 6-element, uncoated lens (B), with more lens surfaces and elements, will transmit only 50%. Thus, at the same f/stop, these lenses differ from each other in light transmittance by nearly 2 to 1.

'T' Stops

Present diaphragm markings on lenses are based on geometrical considerations and do not take into account losses of light resulting from absorption, reflection and scattering. New "T" system is based entirely on light transmittance of lens.

FOR NEARLY fifty years the world's photographers have set their lenses according to f values in the erroneous belief that, because the f/stop represents an immutable mathematical ratio applicable to any lens, the f scale provides uniformity of light transmission. For half a century photographers have been taught that any lens set at a given f/stop will transmit to the film the same amount of light as any other lens set at the same f/stop, regardless of differences in focal lengths or maximum apertures.

Actually, this has never been true. It could be true only if light passing through a piece of glass were to emerge in the same intensity with which it enters. But it does not. The transmitted light is reduced in intensity by a number of factors which vary from lens to lens, and it is the ever-increasing quantity and complexity of these variables that have pushed the f scale literally out of the picture.

M. G. Townsley, in his paper presented before the S.M.P.E. convention in Chicago, in April, 1947, stated that "Motion picture photography and amateur color film are placing an increasing premium on accuracy of exposure. Reflection-reducing coatings have increased the variation from lens to lens in the exposure produced by any given f/stop because the upper limit of lens transmission has been raised to approximately 95 per cent from the old maximum of perhaps 85 per cent; so that it is now possible to have nearly a two-to-one ratio between the exposures made with two lenses having the same geometrical f/stop."

Breaking with the old tradition in one sweeping move, Bell & Howell Company becomes probably the first major manufacturer of photographic equipment to adopt the long heralded "T stop" system (the "T" denotes "transmission"), having announced that its forthcoming entry into the still camera field — the new Bell & Howell "Foton" camera — will carry a lens calibrated in T stops rather than in the universally used f/stops.

Hollywood's cinematographers, too, have finally had enough of the inaccuracies of the f/stop, according to Bell & Howell Company, and are converting to the T stop standard. The company has just finished calibrating 60 lenses in T stops — ten matched sets of six lenses each — for Warner Brothers studios.

The amateur photographer may wonder how, if all this is true, we have been able to use exposure meters for all types and makes of lenses without any adjustment or compensation. In the answer lies recognition of the deficiency of the f/stop system. If the f/stop system meant absolute uniformity (100% light transmission), exposure meter scales would be calibrated on the basis of 100% transmission. But they are not. One of the most popular meters on the market calibrates its f/stop scale for a lens having 76% light transmission. It is recognized that this will be less than some lenses and more than others, but that an average is the best solution possible. The latitude of the film must take care of the actual variation.

Bell & Howell clarifies its statement condemning the f/stop system to oblivion by enumerating the factors responsible for the inaccuracies:

1. *Lens Surfaces.* Every lens surface causes light loss by reflection. The more elements in a lens, the more surfaces to lose light.
2. *Lens Elements.* When light passes through glass, a certain amount of light is lost by absorption. Thus, the more elements in a lens, the more light is absorbed.
3. *Optical Glass.* Certain types of optical glass absorb more light than other types.
4. *Coating.* Lens surfaces that are coated lose only 1% of light by reflection. Uncoated surfaces lose 4%.

(Continued on Page 318)

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TIPS ON TITLES—If you're taking shots in the country this fall, you might try cutting out large cardboard letters for your lead title, and pegging them on the side of a hay stack. Paint the letters white, to show up against the hay.

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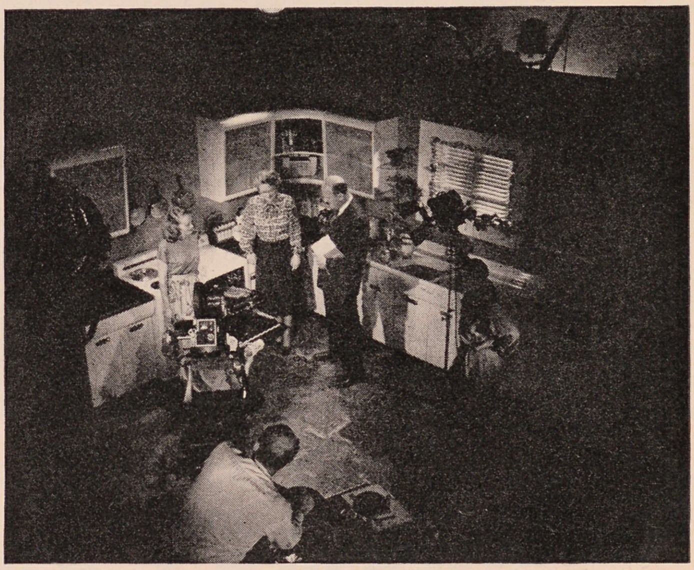
HYPAN FILM

LIGHTING SMALL SETS

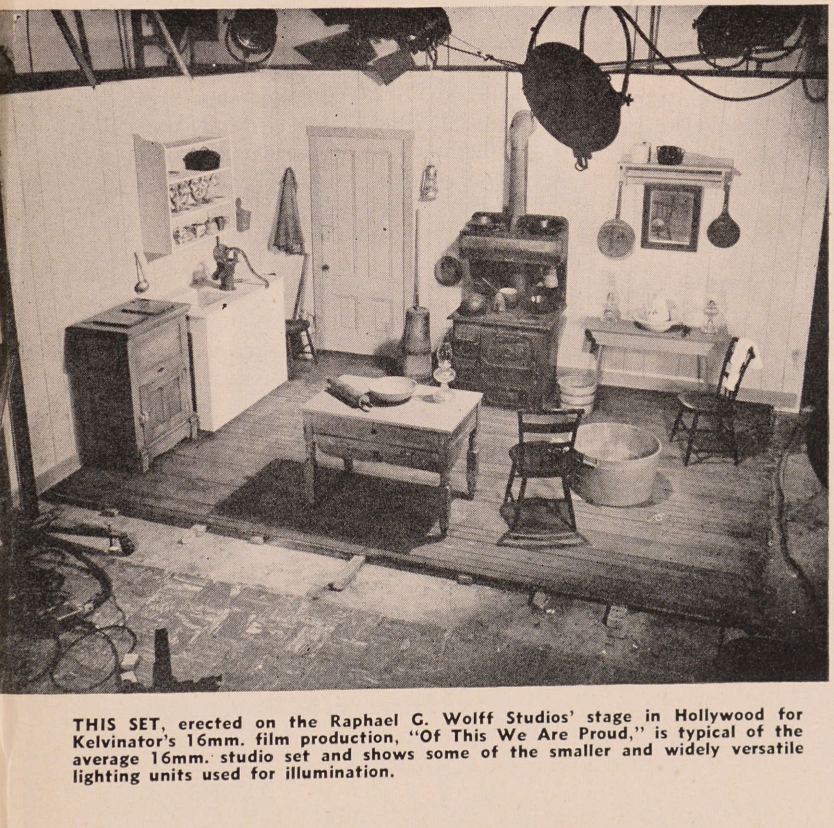
First of a series of articles dealing with lighting as applied in modern 16mm. industrial film production.

By CHARLES LORING



THE AVERAGE 16mm. studio set, being smaller, does not require the array of large lighting units commonly found on Hollywood sound stages. The Bardwell & McAlister Dinky-Inkie, Baby Keg-Lite and the Mole-Richardson Double Broads, Pan Light, and Baby and Junior spots are the lighting units most commonly in use in these studios.

THE PAST few years have seen greatly increased public interest in 16mm. industrial, documentary, advertising and sales training films. The currently booming medium of television has also created a tremendous demand for 16mm. short subjects and "commercials." As a result, many cameramen, both advanced amateur and professional, are switching their talents to 16mm. film production. In advancing from "home movies" to more complex forms of movie-making, the amateur cameraman is often uncertain as to the types of lighting to use, the equipment needed, and the extent to which he can adapt for his use the lighting techniques which are standard in professional film studios. With the aim of answering some of these questions, we shall attempt to analyze the overall lighting problem and perhaps provide some useful information for those just entering the fields of professional or semi-professional production.



THIS SET, erected on the Raphael G. Wolff Studios' stage in Hollywood for Kelvinator's 16mm. film production, "Of This We Are Proud," is typical of the average 16mm. studio set and shows some of the smaller and widely versatile lighting units used for illumination.

The professional cinematographer, of course, is not unfamiliar with modern studio lighting equipment. It is possible, however, that some may not be entirely familiar with many of the smaller lighting units which have found favor with producers of films on the more limited 16mm. studio stages. These cameramen not only will find much in the way of useful data in the descriptions that follow here, but should gain much helpful information on lighting practices as applied to small sets, in subsequent articles.

The first important consideration is, of course, *equipment.* Just what kind of lighting units are to be purchased and *how many* of each will depend upon the actual needs of the cameraman, as well as upon the budget available for such equipment. These two elements may conflict, but nevertheless the cameraman should have available at least a minimum of units necessary to achieve the photographic quality the professional field demands.

The cameraman must first analyze his own needs. Will he be shooting mostly black and white, or color? Will he have to light large sets, or will he confine his activities to filming small areas? Will most of his interiors be shot in a studio or on location? The answers to these questions will determine the kind of units he will need and how many of each. If he intends to shoot interiors in color, for example, he will need three or four times the amount of light he would require for black and white filming. If he plans to light large sets, either in the studio or on location, he will need large units capable of flooding a good-size area with general illumination. If he intends to shoot

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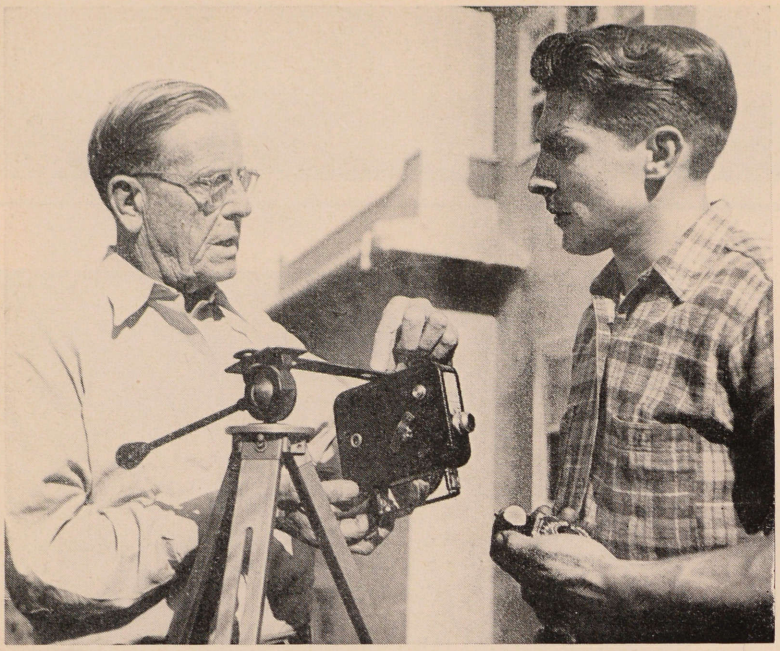

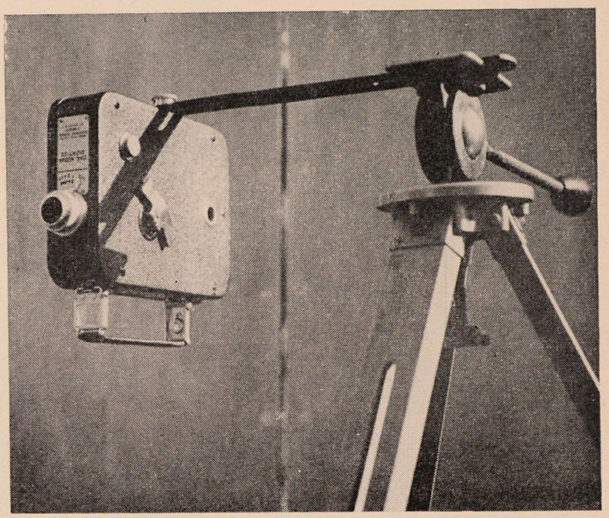

FRED W. JACKMAN, A.S.C., former head of Warner Bros., special effects department, shows an 8mm. cameraist how to mount his camera for reverse action shots. A simple bracket made from a length of strap iron is secured to tripod pan head and the camera mounted upside down at the opposite end. At right is closeup of mounted camera which may be tilted or panned in the usual manner.

Cine Magic

Turn your camera upside down for some startling trick effects in your home movies.

By FRED W. JACKMAN, A.S.C.

THE FOUR basic effects from which the majority of motion picture trick shots stem are reverse motion, double exposure, stop motion, and matte shots. These devices were the basis of many of the old Keystone comedy gags and of much of the spectacular trick shots which featured early day serial films. They are just as valid today for the amateur's use and are as easy to accomplish.

One sure way to break the monotony of straight photography in home movies is to work in a trick or gag shot occasionally—not too often, but just enough to cause your audience to perk up and give more than passing notice to your cinematographic skill.

No matter whether you are shooting movies around the garden, say of the family, the dog and the kiddies, or on an outing or a vacation trip, many opportunities will present themselves for giving your picture a new and interesting twist with a trick shot—providing you are familiar with trick filming routines. And the best way in which to familiarize yourself is to study trick camera effects, then deliberately set about to shoot a few and screen them, in order that you may see for yourself how simple they are to make and how effective they are on the screen.

One of the simplest trick filming procedures is to shoot a scene or sequence with the camera held upside down. What results is "reverse motion"—the action you photograph appears on the screen in reverse. If you shoot a person walking toward you, for instance—with the camera upside down—on the screen this shot will show your subject walking backwards. Any other action in the scene—moving automobiles, a boy pedaling a bicycle, a dog trotting along the sidewalk—all will appear moving in reverse. Of course, to get the film to screen this way, it becomes necessary to cut the trick scene out of the roll of film and turn it end for end, then splice it back again, so that the scene will not appear upside down on the screen. But then, you probably have figured this out yourself.

The example cited above is by illustration, of course. You wouldn't make a trick shot of a person walking backwards just for the trick in itself; too trite. But suppose you are shooting movies in your own backyard next Sunday with your wife and kiddies and the family dog as subjects. You probably have roll after roll of the baby crawling, toddling, walking, and of mother fondling, feeding, and strolling with her; now it's time you shot your family record films with a little continuity so they will have more appeal for others on the screen. After all, what's the use of making home movies if they aren't interesting enough to screen for your family, friends and neighbors?

So, for an interesting sequence you arrange for mother and baby daughter to give the dog a bath. The tub prepared on the lawn, mother and daughter look around for the dog. You make a close shot of him watching from a distance—over by the hedge or corner of the house. As daughter calls to the dog and starts to walk toward him, he backs away and disappears into the hedge or around the house. He knows what's up, and he doesn't want to take a bath.

Mother and daughter give chase and occasionally you pick up the dog emerging from under the house, from around the corner or from under a shrub. And as soon as mother and baby appear, he backs

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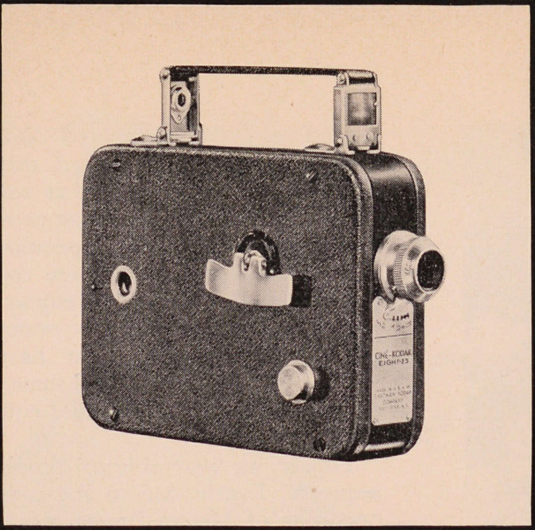
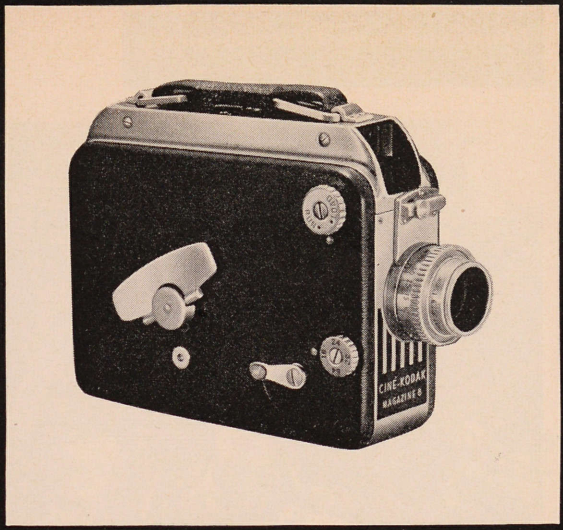


Cine-Kodak Eight-25 Camera The "Economy Eight" makes 20 to 30 scenes on a single, inexpensive roll of 8mm. film. Built-in exposure guide; full-vision finder; footage indicator; accepts lens attachments in easy-to-use Z mounts; fixed-focus f/2.7 *Lumenized* lens, fast enough for wonderful movies, indoors and out. Its "budget price"—only $55, plus tax.



Cine-Kodak Magazine 8 Camera The camera that makes movies as easy as snapshots. To load, you simply slip in a magazine of film and close the cover—you're set to shoot! Four speeds, including real slow motion; exposure guide; standard and accessory lenses, all served by an adjustable finder; fast f/1.9 *Lumenized* lens. $125, plus tax.

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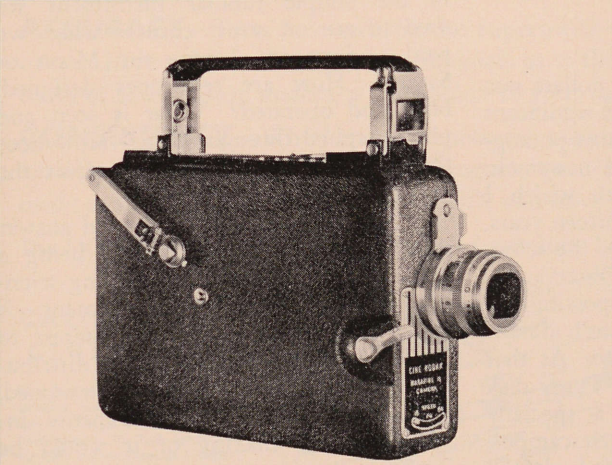
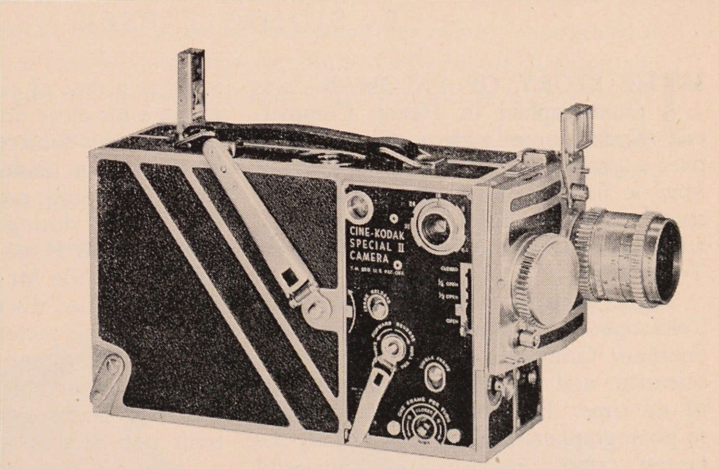


Cine-Kodak Magazine 16 Camera The 16mm. counterpart of the Magazine 8 . . . provides comparable movie-making features, including 3-second loading. Choice of speeds; exposure guide; adjustable finder; footage indicator; scene-length guide; accepts a full complement of accessories; f/1.9 *Lumenized* lens. $150, plus tax.



Cine-Kodak Special II Camera The *new* Special II meets the requirements of all fields served by 16mm. movies. No wonder it's the goal of every movie expert! Integral controls make possible scores of special effects—fades, dissolves, animations, masked shots, varied-speed movies, multiple exposures. With Kodak Cine Ektar f/1.4 Lens, $860, plus tax on lens only.

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Kodak

SIDNEY ZIPSER, Technicolor Corporation technician, and the Cine Special he used in photographing "The Story of Palomar." On front of camera is special wide angle lens attachment Zipser built which enabled him to photograph interiors within the limited area of observatory dome at Mount Palomar.

FILMING THE STORY OF THE "GIANT EYE"

Some of the technical problems encountered in photographing, in 16mm. color, the origin, construction and installation of Palomar 200-inch lens.

By SIDNEY ZIPSER

"THE STORY OF PALOMAR" was photographed in 16mm. Commercial Kodachrome with a Cine Special over a period of eighteen months and is now a finished four-reel picture with sound, which will be released and distributed by the California Institute of Technology.

The now justly famous 200-inch Hale Telescope at Palomar Mountain in Southern California is one of the great scientific and engineering achievements of all time. It is of particular interest to photographers because is is actually the largest camera ever built—a powerful instrument having a focal length of 55 feet and with a main objective having a diameter of 200 inches.

Making a documentary picture of the origin, construction and installation of this gigantic lens was a challenging opportunity and an education in itself, for astronomy has always kindled the imagination of men. The actual building of this giant telescope over a period of twenty years at a cost of six million dollars was to me a far more dramatic and significant photographic subject than combat photography, or the photography of newsreels, travelogues and musicals with which I have worked during the past fifteen years.

Mr. Edison Hoge, who is on the scientific staff of the Mt. Wilson Observatory, and myself had discussed the possibilities of making this picture at a Caltech alumni meeting a year and a half ago. At that time the remarkable 200-inch Pyrex disk was still being polished in a specially built optical shop on the Tech campus, a "figuring" process which had already taken over ten years! This dramatic sequence would be necessary for any documentary picture, and so we started off by seeing what could be done about filming it. Only the technicians actually working on the disk were allowed inside the shop, as a minute particle of grit, if tracked in and carried to the rouge, water or mirror surface, would damage that surface enough to set the entire project back for several years. The technicians on the project always carefully washed themselves and changed to white clothes and shoes before entering the shop, just as surgeons do in preparing for an operation. Also the machines and floors were constantly scrubbed and a specially designed "electric broom" was used to remove any metal particles that might have been tracked in or "nicked" off some of the numerous machines and other equipment inside.

Finally, we were able to complete this sequence, largely due to the careful cooperation of Marcus Brown, who was in charge of the shop, and his associates. We used brand new incandescent lamps, stands, and special cables rigged for this job. This equipment was rigidly inspected, cleansed and placed by the opticians themselves; the number and placing of the lamps being further restricted by the temperature rise on critical parts and by "kicks" in the faces of some of the men which might endanger their work. Extreme undercranking was necessary for the establishing shots photographed from the glassed-in visitor's gallery over 100 feet away and the machinery and men were slowed down as much as possible without interfering with the process. For closer shots, Hoge and I were finally admitted inside the inner sanctum after repeated warnings, careful scrubbing, and the removal of our shoes, just as would be done in a Moslem mosque. The dramatic close-ups obtained show how the finest and most painstaking optical job in history was accomplished.

Seeing the mirror being polished brought up many related questions. Why build such a big telescope? Why is a reflector used instead of a convex lens, as in the simple tubular instrument we used to see on street corners when we paid a dime to observe the Moon or Saturn? How are telescopes designed, built and operated? What is seen and photographed through them? How does this observation and research affect the average man?

If a documentary picture could answer these questions in addition to being a photographic record of an amazing scientific and engineering achievement, it ought to be of considerable interest to laymen and students and a fair distribution might be expected. Thus, I reasoned, the considerable time and expense involved in the making of it would be justified.

So one week-end, through Mr. Hoge's arrangements, we started working at the Mt. Wilson Observatory with a rough script. There was a conventional six-inch telescope similar in principle to Galileo's, which afforded an introductory sequence. Then the 100-inch reflector there, the largest existing telescope at that time, was used to demonstrate (with the aid of

(Continued on Page 320)

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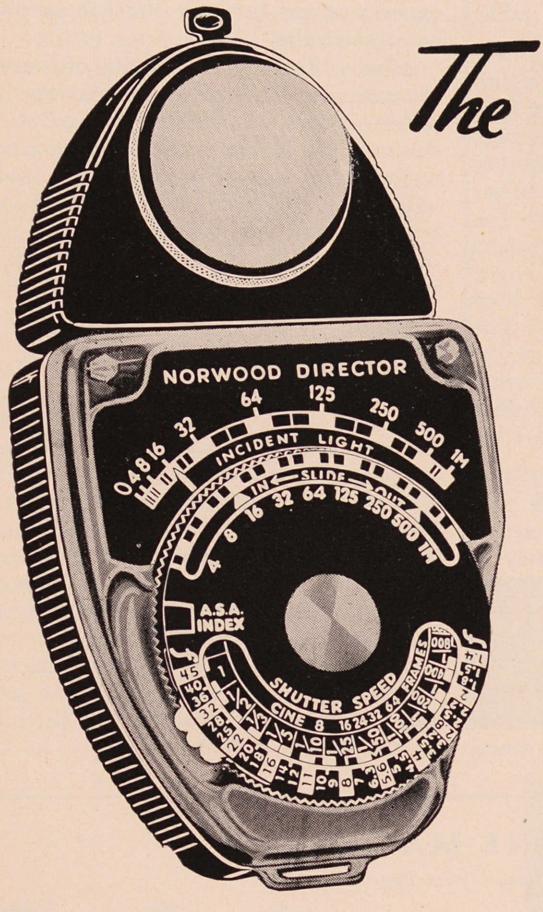

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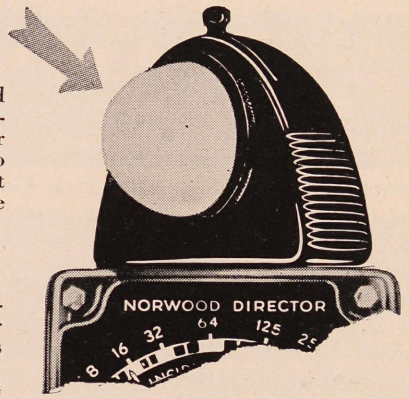

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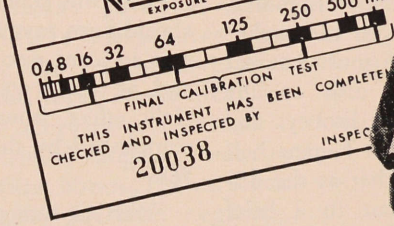

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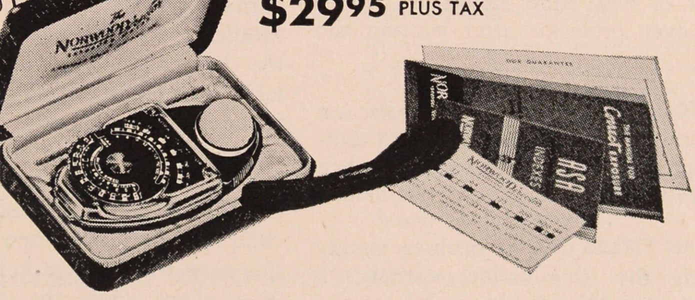

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Cine Kinks

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A FADING GLASS may be made by smoking a rectangular panel of thin glass. Hold the glass over a smoking candle flame and coat the glass with smoke soot, graduating the application from clear to full opaque.

•

PROTECT your projector and editing equipment with jackets made of pliofilm. Material is available in yardage and may easily be stitched on a sewing machine. Pliofilm covers for food mixers make excellent covers for home movie projectors, photo enlargers.

•

INSURE SAFE RETURN of your movie film from the processing laboratory, by printing your name and address on the carton as soon as you purchase film. Film mailed in haste, is often mailed with owner's name and address omitted.

•

TINTING titles photographed on black and white positive film makes them more appropriate for use with color film. Use regular photo tints, available in camera stores, or use Skript writing ink, Diamond Dyes or Rit. Soak individual title film strips in water, to soften the emulsion, then immerse in tray containing the dye solution. Sponge well and wash in clear water, then hang up to dry.

•

EFFECTIVE TRANSITIONS between two scenes can be made by having one of your subjects walk right up to the camera to black out the scene; then begin the next scene by having the same player walk away from the camera until the new scene is fully revealed.

•

WHERE PROJECTOR NOISE interferes with sound played by records with your movies, soundproof it with a blimp made of an ordinary corrugated carton. Cut hole in carton to allow passage of light from lens, also an opening at top to allow exhaust of heat from lamphouse. Place blimp over projector after starting the motor.

•

AN EXCELLENT EMERGENCY projection screen can be made by mounting an ordinary bed sheet over a curtain stretcher. Iron the wrinkles and creases out first.

•

FADES IN TITLES CAN be made by simply dimming the illumination. Connect a rheostat or a Dim-A-Lite switch to the current supply leading to your lamps to raise and lower the lamp voltage.

THREE AND A HALF MINUTE TAKE

(Continued from Page 305)

from a straight-on angle. The fourth would be another closeup of Miss Todd as she exits to camera left. The fifth would be a closeup shot of her, the camera panning as she circled the table.

The sixth would be a shot of her over Peck's shoulder; seventh and eighth would be closeups of Peck, shot over Miss Todd's shoulder to complement setups five and six. The ninth would be another pan shot of Miss Todd as she executed her pirouette and exited to camera left. The tenth would be a close-up of Peck reacting to the pirouette, from Miss Todd's angle. The eleventh would be a pan shot of Miss Todd walking towards the sofa. The twelfth would be a close-up of her reaching for her hat and coat and exiting camera right. The fourteenth and fifteenth would be closeups or pans of Miss Todd as she exists from the room.

With 15 strips of film to work into the scene, the cutter would have inserted 20 to 30 cuts (because each cut may of course be used two or three times in the same scene) by the time the finished prints reached the screen. This would mean that the audience would watch the screen flick to a different subject or angle some 20 to 30 times, instead of none at all as in this Hitchcock scene. Of course Hitchcock did shoot a closeup each of Peck and Miss Todd as protection in case of a hidden flaw in some frame of the big scene; but at the most this would mean a single cut over the bad section of original film.

Morris "Rosie" Rosen's dolly, of course, must be given due credit for making the scene possible and Rosen credited with devising one of the most important cinematographic aids in recent years. Made without blueprints at a cost of $1,700 and nominated for an Academy award, the dolly comprises three basic elements: small square platform, camera post, and wheels. It will travel through any normal double door. The camera post, which is elevated and retracted mechanically, may be raised to a maximum height of four feet from floor of dolly. All four wheels, mounted on swivel bases, can make a full 360 degree turn. They are connected with one another and with the steering column by a roller chain so that all four turn simultaneously and in the same direction.

Its evolution and the effective demonstration of it by Hitchcock and Garmes sets another precedent in motion picture photography which is bound to exert a salutary influence in the planning and photography of dramatic motion pictures of the future. ★ ★ ★

CINE MAGIC

(Continued from Page 310)

out of sight. But he backs up once too often—this time right into daughter's hands, who hurries him off to the tub.

Shots of the dog backing away would be almost impossible to film unless the dog were a trained one. So you turn your camera upside down and shoot as the dog moves forward—from around the corner of the house, from under the shrub, from the hedge, etc., as someone calls to him. And when this scene is cut from the roll of film, shortened to the right length, then re-spliced—you will have just the action called for.

While you've got the family assembled, here's another trick shot you can make: Mother cautions baby she must not eat the banana in the fruit dish on the table. But baby, left alone, disobeys and is caught in the act with the banana half eaten. Make a shot of mother as she discover's the child, then cut to a brief closeup as she expresses chagrin over child's disobedience, then cut to child—this time with camera held upside down. Now shoot while the child peels and eats half of a fresh banana. When you cut this shot out and reverse it, then splice it back again, the child will appear on the screen—not eating the banana—but disgorging it and the banana becoming whole again, even to the skin folding back in place! And baby, caught in the act, undoes her misdeed and replaces the banana in the dish.

Many ambitious amateurs undertake the making of safety education films, often to aid civic safety drives, sometimes for a local school, and not infrequently as a business venture. Invariably the script calls for a shot showing a lad on a bicycle being run down by an automobile. Making this shot appear realistic has not always been easy for some. To film an actual accident would be almost impossible and, of course, too dangerous to risk. The right effect, however, can easily be accomplished by shooting the action in reverse.

With the camera mounted upside down on the tripod, aided by a suitable bracket, the action takes place in *reverse*. It must be carefully staged. The lad is sprawled over his bicycle in front of the stopped car, but in such a position that he can easily rise and bring his bike erect on cue. The cue called, he goes through this motion and backs away toward the curb. At the same time, the automobile backs away.

When this scene is cut out and reversed in the film, the auto will appear to meet and strike down the boy as he rides carelessly in front of the oncoming car. Skillful cutting aided by one or two cover up closeups of the terrified motorist ostensibly braking to a stop, or of his locked wheels skidding, complete the illusion.

The knife throwing gag was always good for a thrill sequence in early day silent films and indeed is occasionally used today in comedies. It's so easy to do that you'll want to try it next time you have a dart game going in the patio or playroom. Instead of using knives, use darts as the medium of your subject's skill or villainy.

The trick is accomplished by *pulling* the darts out of the target, one by one, as your supposedly terrified subject watches them whizz by his head, while your camera, mounted upside down, records the action. Tie stout threads to the darts, long enough to reach beyond camera position. Then have your subject take place in front of dart board. Stick darts into board on either side of his head. If background is predominantly

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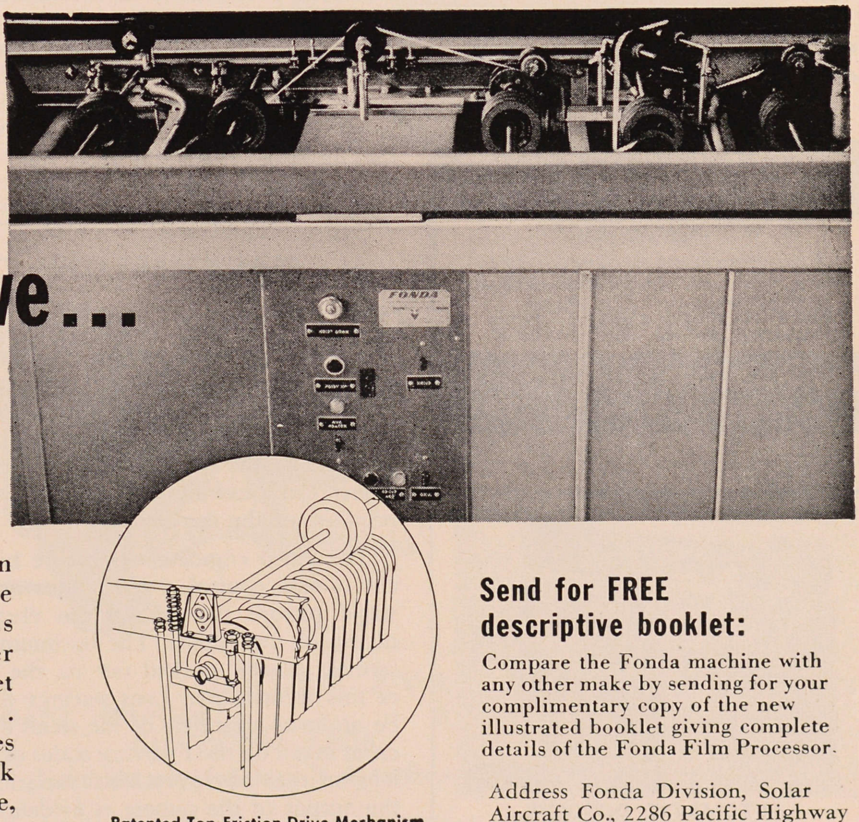

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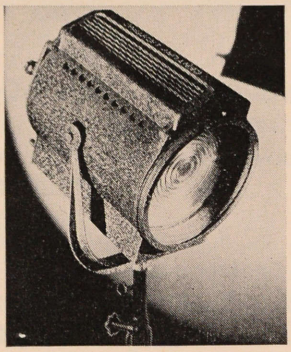

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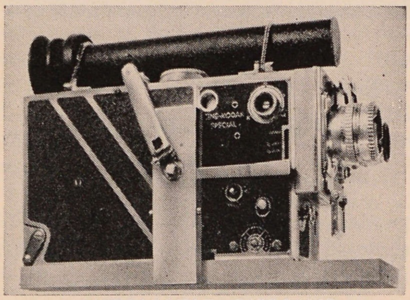

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dark, tie black threads to darts; and if light, use white thread so that threads will not register in the picture and thereby spoil the illusion.

On cue, as your camera starts to turn, your subject registers fright and watches the darts at either side. An assistant, working outside camera range, pulls the darts out one by one by jerking sharply on the threads. Shoot some of the dart action in tight closeups to lend variety to the sequence. When the scene is cut out and reversed in the film, the darts will appear to enter the scene with a flash and imbed themselves in the board close to your subject's head. More realism will be lent the scene if you cut frequently to closeups of the dart thrower just as he releases a dart.

Other illusions possible with the upside down camera are: a diver springing up from a pool to the diving board; a man jumping to top of a high wall or shed; a kitten backing away from a strange new pet; a man effortlessly gathering a load of kindling — the pieces jumping magically into his arms; making a board grow in length by sawing off small sections, etc.

And if you take your vacation by rail this year, you can make an effective scenic shot of the countryside as viewed from front of the locomotive, but without mounting your camera on the cowcatcher to do it. Simply shoot from the rear platform of the train as it moves, holding your camera upsidedown. When the scene is cut out, turned end for end, and re-spliced into your film, it will have all the illusion of having been shot from front of the locomotive.

In keeping with the frequent admonition to "always use your tripod" when shooting movies, you can mount your camera on your tripod in inverted position by providing a simple accessory consisting of a 12″ length of ¼-inch strap iron. Drill quarter-inch holes about a half inch in from either end to take the conventional tripod screw. Mount this bar on tripod, using a ¼-inch No. 20 thumb nut. Mount your camera upside down at the other end, using a regular tripod socket screw which you can buy at any camera store.

Making reverse action shots is slightly more difficult for the 8mm. filmer than for the 16 because 8mm. film, having only a single row of sprocket holes, not only must be turned end for end, but also turned over to bring the sprocket holes in line with rest of the film. Thus the emulsion side of the film strip joins with the glossy or base side of the two film sections to which it is to be spliced. Sometimes this results in slight out of focus on the screen, but this can be corrected by quick adjustment of the lens as projection progresses.

Any deviation, any improvement in your filming, naturally takes a little more pains. But it's worth it as you will invariably discover from the reaction of your friends when they see your pictures on the screen. Keep in mind one thing, however: don't inject a trick shot into your picture just to display your ingenuity. Use it logically — make it a part of the continuity — and the whole effect will appear more professional.

In a future issue we shall describe the application of other professional trick effects to 8mm. and 16mm. movies.

TELEVISION CAMERA OPERATION

(Continued from Page 303)

that would be used with movie cameras using very fast panchromatic film at 24 frames per second. In the final determination of satisfactory lens settings for a given scene, the cameraman and video engineer can carefully check the electrical response of the camera itself.

The video engineer has before him at the camera control a continuous oscilloscope picture that shows the electrical output of the camera. The optimum lens settings can be worked out on the basis of this information. Lens settings should be uniform regardless of the small differences noted on the F-setting scales of each lens so that no appreciable variation in the output of the camera is evidenced as the lenses are switched.

At the last Santa Claus Lane parade in Hollywood, it was possible to make comparisons between the TK-30A field camera and standard newsreel motion picture cameras. In operation, the cameras were located side-by-side on the newsreel platform. Essentially uniform lighting was provided for the general area which allowed the newsreel men to work at an exposure of F1.5 at 24 frames for fast panchromatic film. The TK-30A had no lenses on the turret that were faster than F3.5, but good picture quality was obtained with the 17-in. F5 telephoto which was used for extreme close-ups of celebrities who were riding on the floats. The newsreel cameramen who inspected the TK-30A were quick to note the brightness and clarity of the picture in the electronic viewfinder. At very low light levels, as the motion picture cameraman knows, an optical viewfinder is not always satisfactory. Here the tele cameraman has an advantage in that he can easily adjust the contrast and brightness of his viewfinder picture to suit his requirements.

A discussion of lighting for television could become lengthy. In general, lights, and lighting setups suitable for motion picture work are also satisfactory for television when the Image Orthicon camera is used. However, it is important that the spectral characteristics of the light source closely approximate the response curve of the pickup tube if maximum efficiency is to be realized. The type 2P23 tube has great sensitivity to light in the red end of the spectrum. The type 5655 studio tube has good sensitivity to the blue. Both tubes have good response to the visible spectrum, the exact response curve being a characteristic of the individual tube.

Of the two types, the 2P23 tube, according to the manufacturer, is approximately 10 times more sensitive. For studio work, light levels from 50 to 300-foot candles should be sufficient for high quality work. The 2P23 has yielded a good studio picture with key lighting of about 5 - 10 foot candles. The definition of the picture decreases considerably at very low light levels. There are other factors that also enter into the problem which concern the electronic aspect of the picture.

Much improvement has been made in picture pickup tubes since the time when two- to five-thousand foot candles of illumination were required for television studio shows. Those who work on the television stages today appreciate the great reduction of heat that has been made possible with the use of less lighting facilities.

There is quite a contrast between the operation of a motion picture camera and a television camera. Except in very rare cases, the average take with a motion picture camera ranges from a few seconds to one or two minutes. With the television camera—shooting studio shows or remotes—the cameraman is alert and operating the camera every second during the program interval, which may be as long as two or three hours.

Watching the viewfinder picture intently, he must follow the action and anticipate cues to cover his fellow cameraman when a picture cut is ordered by the program director in the control room. His double headphones carry the director's instructions to one ear and the program sound to the other. Whenever the red signal light flashes "off" in his viewfinder, he knows his camera is momentarily off the air and this usually accompanies instructions to switch lenses or get ready to take a new scene.

Rotating the handle at the rear of the camera, he quickly brings the right lens before the camera tube then corrects it for focus and framing. He must also check in an instant the content and composition of the picture for, in a second or two he may be back on the air. A success-

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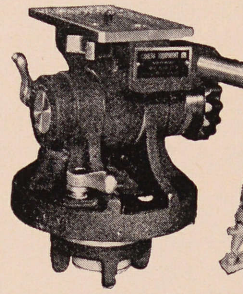
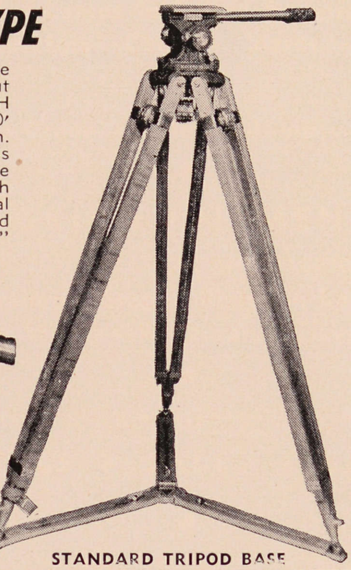
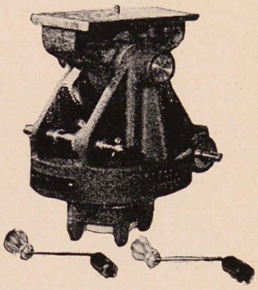
The head, made of Dow Metal, weighs but 5½ lbs. and is interchangeable with the Friction type head. It handles all types of cameras. Snap-on metal cranks control pan and tilt action from both sides. Worm-driven gears are Gov't spec. bronze.





STANDARD TRIPOD BASE



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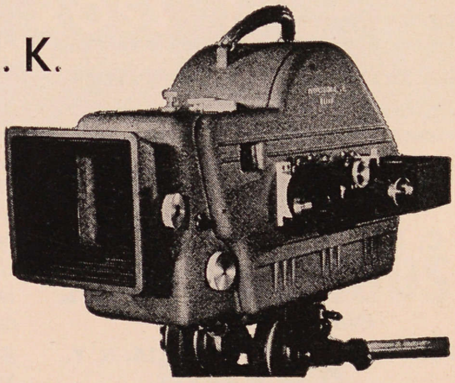

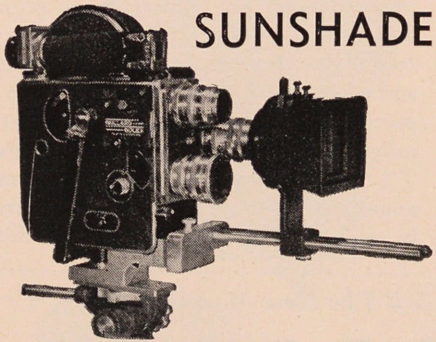

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ful show depends upon smooth teamwork between the two or more cameramen and the technical crew. During the show, a cameraman must always keep in mind his obligation to his teammate to "keep him covered" in emergencies. In television, the photography must be right the first time. There can be no retakes and there are no labs to correct for errors.

'T' STOPS

(*Continued from Page 306*)

5. *Manufacturers' Tolerances.* Even in like lenses, permissable tolerances cause variations in focal lengths, in aperture sizes, etc.

In the early days of photograhpy, B&H states further, the relatively simple construction of all lenses did not disturb the so-called uniformity of the f/stop system. However, the science of photography has made rapid strides through the years, and today's lenses are faster, more complex, and composed of more elements, than could have been remotely imagined when the f/stop system was standardized in 1900.

In a striking example of the inadequacy of the old system, B&H quotes actual computations showing that a 3-element, coated lens will transmit 94% of the light, whereas a 6-element, uncoated lens will transmit only 50%. Thus, *at the same f/stop,* these lenses differ from each other in light passage by nearly two to one!

The T system, B&H claims, will change all this because the T stops represent honest measurement of the light actually transmitted by the lens at the various settings. In the f/stop system, each f value is mathematically figured from the physical dimensions of the lens, with no thought given to glass, surfaces, or any of the other variable factors. In the new T stop system, light is passed through the lens to a photo-electric cell, where it is actually measured. Thus the T value represents the *true* light-admitting ability of the lens, and since the light on every T stop on every lens is actually measured electronically, true uniformity is finally achieved. T 2 or T 8 on any lens will admit the same amount of light as T 2 or T 8, respectively, on any other lens, regardless of differences in focal lengths or maximum apertures.

Bell & Howell is careful to answer in advance one of the first questions put forth by amateur photographers who have no reason to determine the mathematics of lens calibration. Comparison of the two systems will reveal that for a given, physical diaphragm opening, the T stop rating will be slower than the f/stop. Obviously, the same amount of light goes through the particular lens opening at that size, no matter what name is given to the size. The f/stop system will indicate a faster rating because the method of figuring it does not allow for any light loss whatsoever. The T stop rating will be slightly slower because it does take light loss into account and represents true value. The change is simply a change in naming the various diaphragm sizes, and not a change to smaller, slower, apertures. Thus a given lens opening might be rated both f/1.9 and T 2, the f value indicating lens speed that does not exist, and the T rating telling the unvarnished truth for the first time.

Bell & Howell states that its optical engineers have played leading roles in industry-wide consultations on T stop adoption, and that as a result, a committee of the American Standards Association is now preparing a report adopting the T system as an American Standard.

No longer, says Bell & Howell, will newsreel cameramen, for instance, be obliged to calibrate privately their favorite sets of lenses for variations in exposure. And when exposure meter manufacturers can base their scales on 100% light transmission, instead of on an arbitrary average, true readings for exposure will be possible.

Because the T stop is determined by photo-cell-measured light, and because the light from a given photographic subject is also measured by a photo-cell (within the exposure meter), unerring lens adjustments will be possible. With lens calibrations and light from the subject both measured with electronic accuracy, every photo-cell meter actually will be matched to every T stop lens.

All this naturally poses a problem for many readers of how to reconcile exposure meter readings with the new lens calibrations. For the exacting photographer Townsley states that exposure correction may be easily taken into account by using a simple multplying factor to correct the

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of The American Cinematographer are available for most months of 1947 and 1948. Many earlier issues also available. All contain valuable technical articles and information relative to contemporary motion picture photography. The December issues contain an annual index as a guide to content of each year's 12 issues. Price of back issues: In U. S., 30c; Foreign, 40c.

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film speed value to be used. For the Weston exposure meter, for example, the factor has been established at 1/0.76, since the value of 0.76 was introduced into the exposure meter equation as a correction factor for lens losses.

Bell & Howell's engineers state it even more simply. They say that in view of fact most all popular exposure meters are calibrated to account for lens loss, simply advance your Weston speed rating one point. Thus, if you are shooting Kodachrome, which has a Weston rating of 8, you would set it up on your exposure meter as 10 when taking readings for use with lenses calibrated in T stops.

KALEIDOSCOPIC FILTERS

(Continued from Page 301)

outlined with ink, and when the entire composition is so charted, the various areas are subject to an application of colored gelatins or of transparent color or both, whichever is required to produce the desired effect.

The application is illustrated in the accompanying diagrams of an actual scene I recently photographed. The larger shows a typical coastal scene in which a nearly white sky and high water reflection prevail and, in addition, the terrain in the foreground is a brownish, almost colorless tone instead of the green desired in the planned pictorial composition.

In order to put color into the scene where none exists, the panel of glass is diagrammed as shown in the illustration at the left. Subsequently a rectangular pola screen is applied over the entire glass. This takes care of the water and other undesirable reflections. Then a clear-to-blue filter gel is applied over the sky area to lend a natural sky tone instead of the existing washed out white or "Santa Monica" sky so familiar to Hollywood cinematographers. The sea area, of course, was not modified beyond that imparted by the pola screen. The lower third of the picture area was treated with a carefully cut section of green filter gelatine. Before this was applied, a square was cut out leaving clear that area of the scene in which live action was to take place. After the green filter was applied, then green paint was sprayed over the comparatively small area in the scene not corrected by the filter, the paint being carefully matched with the tone of the green filter.

Lighting contrast control is also possible by this method of cell-onto-glass by applying N.D. gelatine of the proper density. In one scene of the production cited here, my entire picture composition was shaded except for the center area of the middle background where the main action was to take place. My meter indicated a 3-stop difference between the two areas—far beyond the latitude of the film I was work-

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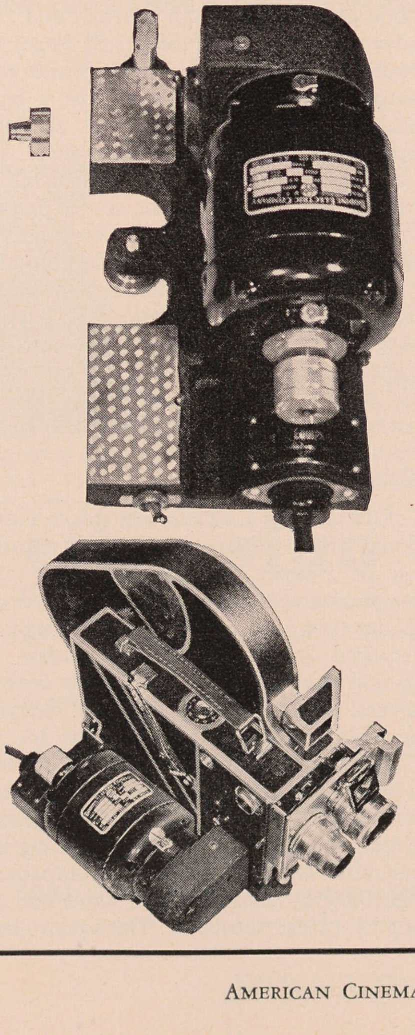

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With A. S. C. and Members

- JACKSON ROSE, Steve Norton, George Meehan, and L. Guy Wilky in the July, 1923 issue of THE AMERICAN CINEMATOGRAPHER, discussed the uses and abuses of gauze in cinematography. "Gauze," said Rose, "is properly and more effectively used with the lens at maximum opening."
- JOHN ARNOLD started shooting initial scenes for "In Search of a Thrill," starring Viola Dana, for Metro.
- JOHN SEITZ and Victor Milner completed filming Rex Ingraham's production of "Sacramouche" for Metro.
- SAM LANDERS was assigned to do the camerawork on Associated First National's production of "Thundergate," directed by Joseph de Grasse.
- TONY GAUDIO, at the request of Norma Talmadge, was assigned to photograph "Rose of All the World."
- FAXON DEAN was shooting the first Paramount Pictures production starring Douglas Fairbanks, Jr., and directed by Joseph Henabery.
- ARTHUR EDESON was photographing Douglas Fairbanks, Sr's., production of "The Thief Of Bagdad."
- DAVID ABEL was preparing to shoot "Lucretia Lombard," a Warner Brothers production, having wound up the camera work on "The Gold Diggers" for the same studio.
- ROLLIE TOTHEROH was doing the camera work on Charlie Chaplin's production, "Woman of Paris," starring Edna Purviance.
- NORBERT BRODIN was selected by Frank Lloyd to be his chief cinematographer on his new productions for First National.
- CHARLES ROSHER was filming "Tiger Rose" for Warner Brothers and had Ernest Palmer and Reginald Lyons on second unit camera for location scenes.
- SOL POLITO was putting the final cinematic touches on Edwin Carewe's production of "The Bad Man" for First National.
- VICTOR MILNER revealed in a special article in The American Cinematographer that in 1912 he had taught Calvin Coolidge to operate a motion picture camera. Coolidge later took the camera north with him and made movies during a moose hunt. Coolidge was now President of the United States.
- ROBERT NEWHARD was awaiting the world premiere of "The Hunchback of Notre Dame" which he had photographed for Universal.

ing with. The situation was corrected by applying a piece of N.D. filter gelatin over the bright area on the glass panel on the matte box which made possible a balanced over-all exposure for the scene.

The method I follow in judging filter densities employs an incident light meter, converted to read reflected light. Holding the filter in front of the meter cell, and reading the scene through the filter gives an approximate figure which is correlated with characteristics of the color film used on the production.

Where panning or tilting is required, the filters-on-glass procedure undergoes slight change. Instead of mounting the glass in front of the matte box, a larger glass panel is used and mounted on supports some distance ahead of the camera, as in making a glass shot. The method of outlining the areas to be filtered is the same as for the smaller glass panel, as is that for application of the filter gels. The area between the filter glass and the camera, of course, must be blocked out to form a virtual giant matte box. This may be done using a black cloth and battens.

Still another use for colored filter gelatins is in conjunction with reflectors used on exteriors. While shooting location scenes for "Last of the Redmen," I wanted the Indians to appear more like shining copperskins. By spraying them with oil and using gold foil reflectors the effect achieved was excellent. When there were not enough gold foil reflectors to cover the area, we simply applied large sheets of amber colored filter gelatin over silver reflectors and used them to augment the gold reflectors with good results.

Graduated color filters are available on special order from Harrison & Harrison and it was the cooperation of this company which enabled me to switch from experimenting with clear paints on glass to gelatins in making my kaleidoscopic filters. The Mole-Richardson company also have gelatin sheets available in a wide variety of colors. To apply the gelatins to glass requires only wetting one surface and smoothing them on. To secure them in place for an extended interval of time, it is advisable to apply another panel of glass over the gels, forming a sandwich.

FILMING STORY OF "MAGIC EYE"

(Continued from Page 312)

animated diagrams) how a reflector works, how large telescopes are used mostly as cameras, and what is seen and photographed through them, and the advantages and need of a still larger instrument. Incidentally, the 100-inch telescope, painted flat black against a black background, presented some technical problems in color photography. The lighting was not only limited by the black subject and a seventy-foot spread for the long shot, but also by the objection to any lighting equipment which would appreciably raise the temperature inside the dome, as previously mentioned. And the shutters couldn't be opened to admit daylight for the same reason, for the warm air would expand some of the critical parts a few millionths of an inch and thus distort the image of that night's scheduled observation.

Still another problem was the confining dome of the observatory which required use of a super wide-angle lens in order to photograph action within the dome. I also saw that such a lens would be required in shooting scenes within the optical shop at Palomar and for making several other interior shots. I designed and built a triple reducing lens for my Cine Special which photographs a much wider angle than the conventional 25mm. lens used on 35mm. motion picture cameras in the studios. This reducing lens assembly is shown in the accompanying photograph, flanked at the sides and the top by a large sunshade. The square housing encases three plano-convex lenses—one 2-inch, one 3-inch, and one 6-inch. The lenses were obtained from various optical shops. Putting the lens together and testing it consumed the better part of two weeks.

During the shooting, Hoge and myself were aided materially by the astronomers, engineers and opticians, all of whom appreciated what we were trying to accomplish. Their cooperation permitted a natural presentation of men actually at work without resorting to actors, reenactments or posed shots against fake backgrounds. Then their suggestions and criticisms made the picture absolutely authentic, too. After the final narrative script was written, I found it weighted with too many technical terms, so I rewrote the narrative in simple understandable language which was again double-checked for accuracy.

Production of the 200-inch lens was covered completely. Not having been on hand with a camera when glass for the lens was first poured at the Corning Glass works years earlier, nor when subsequent operations in the forming of the giant disk were undertaken, I bridged these events, in order to retain complete continuity, by copying stills showing pouring of the glass. These and other stills were photographed by having 8x10 transparencies made of them, then photographing them by means of light projected from the rear. Here critical exposure meter readings were necessary as well as several test runs, in order to insure the photographic result desired.

Following this sequence were live action sequences depicting the Cal-Tech campus, the astro-physics building, and the optical and instrument shops there. Picturing drawings and scale models of the 200-inch telescope built up an understanding of the instrument and made possible a clearer understanding of the problems involved in its construction. In order to convey the extreme accuracy necessary in the grinding and polishing of the giant lens element, I included a brief sequence which shows how small, two-inch lenses were originally ground by hand, and how larger lenses and mirrors require increasingly larger and more complex machines and tools.

The Foucault test climaxes the polishing of the 200-inch mirror. When, after eleven and one-half years, the final accuracy of the concave surface is measured by the reflection of a tiny beam of light, actual shots were made of this process in which a pattern of light and shadow indicates variations in the surface of only two-millionths of an inch. Imagine using a flashlight bulb to photography an area seventeen feet wide, and in color!

The loading and moving of the mirror in its cell, 35 tons of steel and glass, was one of the most amazing feats of heavy but delicate transportation ever recorded. A 58-wheeled trailer pulled and pushed by three powerful tractors was escorted by the California Highway Patrol over cleared and in some cases specially built roads and reinforced bridges to Palomar Mountain. This requence added considerable suspense and scenic interest to the picture, and involved some "jack-rabbit" operations on my part in order to catch the dramatic transportation highlights with my camera. The route travelled by the trucks was cleared well in advance of the truck and heavily guarded. Thus, despite my connection with filming the project for Cal-Tech, I frequently encountered difficulty in getting my car on the highway again after making a shot in order to speed ahead for the next camera setup. But by poring over maps and planning many shortcuts in advance, I managed to make the appointed camera positions in ample time to get set up and ready for the trucks when they arrived on the scene.

Looking through a large telescope reveals millions of stars that can't be seen with the naked eye. These visible stars can be photographed in about five minutes with a still camera. Obviously, a longer time exposure reveals more stars, billions more in fact, stars which can never be seen except on negatives exposed continuously, hours at a time, sometimes for several successive nights. As the earth rotates, the telescope must be moved con-

(Continued on Next Page)

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Current Assignments of A. S. C. Members

Members of The American Society of Cinematographers were engaged as Directors of Photography in the Hollywood Studios during the month of August, as follows:

Columbia

- Burnett Guffey, "Knock On Any Door," (Santana Prod.) with Humphrey Bogart and Susan Perry. Nicholas Ray, director.
- Lester White, "Jungle Jim," with Johnny Weismuller and Virginia Grey. William Berke, director.
- Joseph Walker, "Mr. Soft Touch," with Glenn Ford and Evelyn Keyes. Gordon Douglas, director.
- Phil Tannura. "The Lone Wolf and His Lady," with Ron Randell, June Vincent and Alan Mowbray. John Hoffman, director.
- Vincent Farrar, "The Crime Doctor's Diary," with Warner Baxter, Lois Maxwell and Adele Jergens. Seymour Friedman, director.

Eagle-Lion

- William H. Greene, "The Big Cat," (Technicolor) with Lon McCallister and Peggy Ann Garner. Phil Karlson, director.
- John Alton, "Red Stallion of the Rockies," (Cinecolor) with Jean Heather and Arthur Franz. Ralph Murphy, director.

Independent

- Winton Hoch, "Tulsa," (Walter Wanger Prod.) (Technicolor) with Susan Hayward and Robert Preston. Stuart Heisler, director.
- Ernest Laszlo, "The Lucky Stiff," (American Enterprises-UA) with Dorothy Lamour, Brian Donlevy and Claire Trevor. Lew Foster, director.
- Lee Garmes, "The Best Things In Life Are Free," (Enterprise) with Barbara Bel Geddes, Robert Ryan, James Mason. John Berry, director.
- William C. Mellor, "Blonde Heaven," (Lester Cowan-UA) with the Marx Brothers and Ilona Massey. David Miller, director.
- Gilbert Warrenton, "Parole," (Orbit-E. L.) with Michael O'Shea, Turhan Bey, and Evelyn Ankers. Alfred Zeisler, director.
- Walter Strenge, "A Date With Murder," (Falcon Prod.) with John Calvert and Catherine Craig. Jack Bernard, director.
- Fred H. Jackman, Jr., "Canadian Pacific," (Nat Holt-20th) (Cinecolor) with Randolph Scott and Jane Wyatt. Edwin L. Marin, director.
- Lucien Andriot, "Outpost In Morocco," (Moroccan Pictures-UA) (Goldwyn) with George Raft and Marie Windsor. Robert Florey, director.
- Benjamin H. Kline, "Last of the Wild Horses," (Lippert-Screen Guild) with James Ellison, Jane Frazee and Mary Beth Hughes. Robert L. Lipper, director.
- William A. Sickner, "Rose of Cimarron," (Alson Prod.-20th) with George Montgomery, Rod Cameron and Ruth Roman. Lesley Selander, director.
- John Alton, "Reign of Terror," (Walter Wanger-EL) with Robert Cummings and Arlene Dahl. Anthony Mann, director.

M-G-M

- Charles Schoenbaum, "Little Women," (Technicolor) with June Allyson, Margaret O'Brien, Eliz. Taylor, Janet Leigh and Peter Lawford. Mervyn LeRoy, director.
- Harry Stradling, "Barkleys of Broadway," (Technicolor) with Fred Astair and Ginger Rogers. Charles Walters, director.
- George J. Folsey, Jr., "Take Me Out To the Ball Game," (Technicolor) with Frank Sinatra, Esther Williams and Gene Kelly. Busby Berkeley, director.
- Robert H. Planck, "Little Women," (Technicolor) with June Allyson, Margaret O'Brien, Eliz. Taylor, Janet Leigh and Peter Lawford. Mervyn LeRoy, director.

Monogram

- Harry C. Neumann, "Call of the Cactus," with Jimmy Wakely and "Cannonball" Taylor. Lambert Hillyer, director.
- Marcel LePicard, "Incident," with Warren Douglas and Jane Frazee. Hall Shelton, director.
- Mack Stengler, "Joe Palooka in the Big Fight," with Joe Kirkwood, Jr., and Lina Romay. Cy Endfield, director.
- Harry C. Neumann, "Gunning for Justice," with Johnny Mack Brown and Evelyn Finley. Ray Taylor, director.

Paramount

- Leo Tover, "The Heiress," with Olivia DeHaviland and Sir Ralph Richardson. William Wyler, director.
- Ray Rennahan, "Streets Of Laredo," (Technicolor) with William Holden, William Bendix and Mona Freeman. Leslie Fenton, director.
- John F. Seitz, "One Woman," with Alan Ladd, Donna Reed and June Havoc. Lewis Allen, director.

R-K-O

- Harry Wild, "Interference," with Victor Mature and Lucille Ball. Jacques Tourneur, director.
- J. Roy Hunt, "Gun Runners," with Tim Holt, Richard Martin and Martha Hyer. Frank McDonald, director.
- Robert DeGrasse, "Follow Me Quietly," with William Lundigan and Dorothy Patrick. Richard Fleischer, director.

20thCentury-Fox

- Arthur Miller, "Three Wives," with Jeanne Crain, Linda Darnell and Jeffrey Lynn. Joseph L. Mankiewicz, director.
- Harry A. Jackson, "Chicken Every Sunday," with Dan Dailey, Alan Young and Celeste Holm. George Seaton, director.
- Charles G. Clarke, "Sand," (Technicolor) with Mark Stevens, Coleen Gray and Rory Calhoun. Lou King, director.
- Joseph LaShelle, "The Fan," with Jeanne Crain and George Sanders. Otto Preminger, director.
- Arthur Arling, "Mother Is a Freshman," (Technicolor) with Loretta Young and Van Johnson. Lloyd Bacon, director.
- Joe MacDonald, "Down to the Sea in Ships," with Richard Widmark, Cecil Kellway and Dean Stockwell. Henry Hathaway, director.

Warner Brothers

- Robert Burks, "The Fountainhead," with Gary Cooper and Patricia Neal. King Vidor, director.
- William E. Snyder, "The House Across the Street," with Wayne Morris and Janis Paige. Richard Bare, director.
- Carl Guthrie, "Somewhere in the City," with Viveca Lindfors and Edmond O'Brien. Vincent Sherman, director.
- Ernest Haller, "Happy Times," (Technicolor) with Danny Kaye and Barbara Bates. Henry Koster, director.
- Wilfrid Cline, "Two Guys and a Gal," (Technicolor) with Dennis Morgan, Jack Carson and Doris Day. David Butler, director.
- Karl Freund, "Montana," (Technicolor) with Errol Flynn and Alexis Smith. Ray Enright, director.

'GIANT EYE'

(Continued from Page 321)

tinuously during the exposure with unbelievable accuracy, to hold the image of the stars.

Limitations on film speed and static views make motion pictures through a telescope meaningless generally, but again still transparencies were copied for this picture to show the beauties, the mysteries, and the measurable data of our vast universe. To trained observers, the 200-inch telescope will present the greatest and most unknown frontier that the mind of man has ever explored. We must remember that steam and electricity and atoms were once impractical laboratory curiosities. No man can foresee what modern astro-physics may bring forth in this scientific age. The stars have already revealed new elements, sources of atomic energy, and confirmation of the sweeping theories of Copernicus and Einstein. And there is that age old satisfaction men have always had in looking with wonder at the heavens, feeling our destiny is somehow locked in their dim and distant secrets.

LIGHTING SMALL SETS

(Continued from Page 309)

on location most of the time, he will want lighting units that fold up for easy portability, but which are sturdy enough to be hauled about and simple enough to be set up quickly in a new location.

The matter of budget is bound to rear its ugly head unless the cameraman is fortunate enough to have unlimited funds to spend on equipment. Top-grade lighting units are fairly expensive and would represent quite an investment for the cameraman or producer who shoots few interior sequences. In such cases, it is better to rent lighting units than to tie up a large sum of money in purchased equipment. But if the cameraman knows that he will be shooting interior sequences frequently, it is wiser by far to invest in substantial lighting units. If his funds are limited, he will do well to invest in a few good basic units (which may be bought used) and fill in with photofloods or improvised reflector set-ups.

Let's take a look at the types of small set lighting units available and compare the characteristics of each, starting with the simplest units and working up to the more elaborate pieces:

Photofloods—These are high-intensity incandescent bulbs available in three sizes (250 watts, 500 watts, and 1,000 watts). The two smaller bulbs, numbers 1 and 2, have standard bases and will fit any household screw-socket. The larger bulb, number 4, has a larger mogul type base and must be used in a special socket. The average burning life of these bulbs is about six hours, and they are most effective when used in metal reflectors. Photofloods are very useful when mounted in banks for high-intensity general illumination. In professional cinematography they are often used to boost the general light level, especially in color photography where higher levels of illumination are required.

Reflector Spots and Floods—These are "mushroom" shaped units with reflectors built into the bulbs. Their chief advantage is that they are complete in themselves and need no additional reflectors. The floods can be used very successfully in banks for general illumination. The spots give out a concentrated, softly diffused beam that serves as a good modeling light in black and white cinematography.

The Dinky-Inkie—This is the smallest standard spotlight unit used in motion picture photography, and it is a real boon to any cameraman. Carrying a bulb of 100 to 150 watts, it is extremely versatile and portable. Its small size enables it to be easily concealed behind furniture or props on the set. It has a beam that can be focused from 4 to 44 degrees, and a complete line of accessories is available for use in controlling the light.

The Baby Keg-light—A widely used 500-750 watt spotlight that is valuable as a light-weight all-purpose unit. It is a a basic unit in black and white filming, and valuable as a secondary unit in color cinematography. The Foco-spot attachment that fits onto this unit permits a wide variety of unusual effects.

The Junior Spotlight—A 1,000-2,000 watt unit is an excellent basic light for the cinematographer. Equipped with a 2,000 watt bulb, it also serves well as a key-light for black and white cinematography and can be similarly used in color photography when a wider aperture is used. The Junior Spot combines adequate illumination with easy portability, and is equipped with a sturdy stand that folds up into a small space. A complete line of accessories affords the ultimate in light control.

The Senior Spotlight—A 5,000 watt unit that is invaluable to the professional cinematographer. It is sufficiently bright to simulate outdoor sunlight on an interior set, as well as to cover large areas with general illumination. As a key-light in color filming it is unexcelled, since it allows the cameraman to stop down his lens aperture for greater depth-of-field. It is a light bright enough to dominate the key of a set-up without getting lost in the superimposed light of other units that may be used for general illumination. For this reason, it is especially useful in creating a modeled effect in color filming. The Senior Spot is, however, an expensive unit, both from the standpoint of cost and the amount of current used. The newly-turned professional cameraman will do well to make sure of his needs before investing in this unit:

Single and Double Broads—These units accomodate 500 or 750 watt globes in a lamphouse featuring a highly diffused lens. The singles have one bulb, while the doubles carry two. The quality of light is extremely soft, ideal for filling the shadow side of a face in close-up. The Broads are also useful in casting an even tone of light on backgrounds, as well as for softening harsh shadows cast by the key-light. Broads are especially adapted to black and white cinematography because they are relatively weak in intensity, but the double broad is often used in color close-ups as a fill light for producing translucent shadows.

The Cinelite—A recently developed general-purpose unit consisting of a metal stand topped with a parabolic reflector into which is fitted a No. 4 photoflood globe. This unit was especially designed as a portable general-illumination source for color photography, and it fills the bill perfectly. On large sets, several of these units can be mounted on an overhead pipe to flood the stage area.

The above standard lighting units are generally available from any studio lighting dealer. For the spotlights described accessories are available such as barn doors, snoots, diffusers and daylight filters (for use when mixing daylight with artificial light in color filming.)

In addition to the lighting units themselves, suitable electrical wiring facilities must be obtained. For location shooting, the main piece of equipment will be a master switch box with a heavy cable that can be tapped into city lines or existing current on the scene. Plugging into this box will be two or three other cables each terminating in a switch box capable of accommodating up to six lighting units. For semi-permanent set-ups, such as a building converted to a shooting stage, a main "hot-line" can be brought in and installed in a metal conduit. Standard stage boxes can be attached to this line, and the units fitted with stage plugs.

The amount of current needed will depend upon the number of units to be used and the amperage they will draw.

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Roughly speaking, one ampere of current will be required for each 100 watts of illumination. The standard house circuit is wired to accept only 10 to 15 amps. Overloading such circuits, even when heavier fuses are installed, may result in burned-out wiring and an actual fire hazard. So, if you are planning to use a number of heavy lighting units, be sure that your electrical facilities are strong enough to accomodate the current required.

How many units to buy depends, as we have said before, upon the types of filming done. The minimum basic requirements for professional lighting quality, however, should include one Junior Spotlight, 3 Baby Keg-lites, 2 Dinky-Inkies, and one single or double Broad, or their equivalent. If filming is to be done in color, at least six Cinelites should be purchased in addition to the other units. A Senior Spotlight is a very valuable unit to have on any sort of large scale production. Banks of reflectors made with sockets mounted in a row on a wooden base are good general illumination sources for use on location.

It is wise for the producer or cameraman just going into professional production to analyze his own needs, purchase the minimum number of lighting units, and gradually add any additional units which time and experience indicate a need. If his funds are limited, he may purchase a very few professional lighting units and supplement them with home-made reflector and strip-light units using photoflood lamps as a light source.

NEXT MONTH: Part II—Basic Set Lighting.

BULLETIN BOARD

(Continued from Page 296)

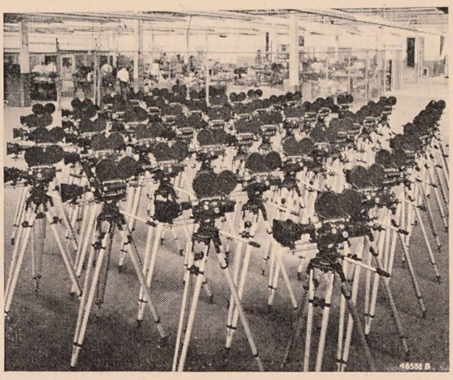
Seely, Montana, fifty miles northwest of Missoula. The property, to be developed as one of America's finest dude ranches, has four lakes and five streams heavily stocked with trout, two ski runs and a private landing field equipped to handle standard airliners as well as private planes. Recently Ralph Staub, A.S.C., journeyed there with Glenn Ford, Eleanor Powell, Sonny Tufts and Charlie Ruggles to produce one of his "Screen Snapshots" short subjects. Life magazine's photographers will cover a grizzley bear hunt there in October.

•

CORRECTION: In Fred Gately's article describing the Spectra meter last month, the 6th line in second paragraph on page 280 should have read," . . . degrees *or 3200 degrees* Kelvin, and either the light itself . . ." In the 23rd line, 1st paragraph, 2nd column, same page, the word *separation* should have been *situation.* Our proofreader's apologies to Fred Gately and our readers.

WHAT'S NEW

in equipment, accessories, service



FIFTY-SEVEN brand new "16mm. Professional" Mitchell cameras, part of large Navy contract order.

Mitchell Anniversary

This month, Mitchell Camera Company, Glendale, Calif., celebrates the first anniversary of the introduction of its "16mm. Professional" motion picture camera by delivering the first group of cameras—57 in all—on its contract with the U. S. Navy. Cameras, pictured above, will be distributed among the Navy's various motion picture units.

Designed to meet the need for really professional equipment in the Navy's expanding training film production activities, these cameras will soon be manned by carefully trained Naval cinematographers in a program of research and training film production.

The Mitchell "16mm. Professional," which is virtually identical to the famed Mitchell 35mm. studio camera, incorporates the same proven features of its studio counterpart. Every type of photographic effect possible with a 35mm. camera is also possible with the Mitchell "16mm. Professional."

50th Anniversary

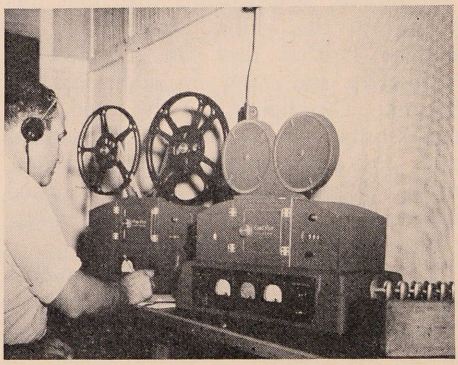
September 13th marks the 50th anniversary of the day in 1898 when Fred Schmid, a young instrument-maker, applied for a position with the Goerz Optical Works in Berlin-Friedenau, Germany. After an interview with C. P. Goerz, founder of the Goerz enterprises, latter offered to send him to America to open a branch factory there.

The American firm was incorporated in 1906 as the C. P. Goerz American Optical Company. The German Goerz Company was merged in 1926 with the Zeiss Ikon Corporation in Germany. Today the American Goerz firm is the only company which supplies a full line of the celebrated Goerz photo-lenses. Fred Schmid, at first in charge of production, was made general manager in 1910, vice president of the American company in 1920, and finally president in 1937.

16mm. Tape Recorder

Combining a typical motion picture engineered high fidelity synchronous 16mm. recorder with a 16mm. high fidelity magnetic tape recorder, the Cine-Pro Corp., 106 West End Ave., New York City, offers a versatile magnetic recording device that affords the 16mm. film producer the means for recording sound for his films at a considerable saving over photoelectric recording.

The tape, which has standard 16mm. film perforations, travels at a speed of 14.4 inches per second or twice ordinary 16mm. film recording speed, which insures a frequency response beyond 13,000 cycles. A combination forward-reverse switch affords quick rewinding of the recorded tape. A footage counter indicates the return of tape to exact starting point. Large reel arms permit use of tape in 1600 foot spools to provide a maximum of 22 minutes of continuous recording. As with all magnetic recording mediums, the tape may be erased and re-used hundreds of times.



CINE-PRO magnetic tape recorder uses perforated 16mm. film, is synchronous motor driven.

The synchronous motor drive of recorder affords use of recorder for lip-sync sound recording with any camera driven by a synchronous motor. Fidelity of track produced by the Cine-Pro magnetic tape recorder is said to exceed that of the finest 35mm. photoelectric recorded sound track due to extremely low background noise inherent in magnetic recording.

S.O.S. In New Quarters

S.O.S. Cinema Supply Corp., New York, celebrated its 22nd anniversary recently by moving into its wholly-owned and completely new quarters at 602 West

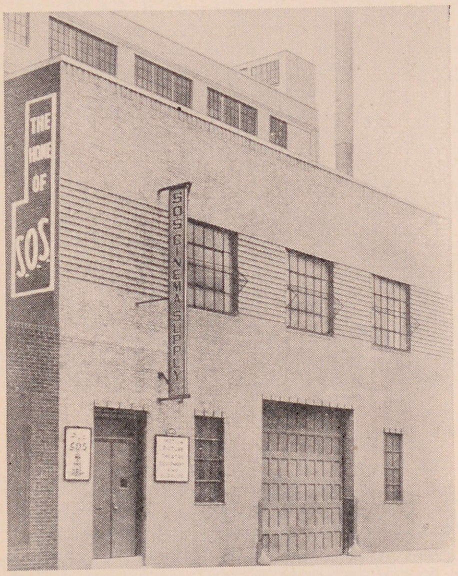
52nd St. Founded 22 years ago by J. A. Tanney, company president, organization now commands 3½ acres of floor space and a substantial and highly expert staff of camera and laboratory technicians.

When sound was first added to silent pictures, the new art required the services of skilled sound technicians, and very few trained men were available.

Tanney formed Service on Sound Corp. (hence S.O.S.) with a nucleus of ex-radio and broadcasting engineers, to give periodic and emergency service to the industry.

As the big Electrics expanded their own service departments and rental arrangements, S.O.S. swung into sales, repairs and maintenance, changing its corporate title to Sales on Sound. In a few years, with the emphasis definitely on sales, it adopted its present name S.O.S. Cinema Supply Corp.

Claiming to offer complete coverage of the entire line of equipment needed by cinematographers the company today handles every known make of cinematic, printing, processing, lighting and recording apparatus, either as new or as reconditioned equipment, or both. S.O.S. does its own reconditioning with the help of the most advanced machine tools and extremely skilled and versatile machinists.



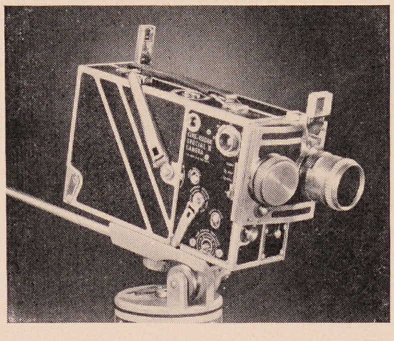
S.O.S. Cinema Supply Corpn., of New York recently moved to these new quarters.

While many patrons visit its New York headquarters, S.O.S. conducts its business largely via mail order. Because of this policy, Tanney explains, the company rarely sends out sales representatives, except on major undertakings.

New Cine-Special

The famous Cine-Kodak Special camera now features a new type of lens turret, and improved reflex, eye-level, and peepsight viewfinders. It also will be equipped with the new Kodak Cine Ektar 25mm. f/1.4 lens as standard.

The newly designed lens turret—most apparent outward change in the camera—is equipped with integral adapters which accept the full line of Cine-Kodak interchangeable lenses. The adapters are of ball-bearing construction and lenses, once seated, are locked securely in position. Lens block is angled to prevent second lens from interfering with the first—either physically or optically—when the first is in picture-taking position. Any two current Cine-Kodak accessory lenses—regardless of speed or focal length—can be used in combination and with easy interchangeability.



CINE-KODAK "Special" with re-designed 2-lens rotary turret, new Cine Ektar lenses.

Changes have also been made in the eye-level finder system. A separate front-finder element is now made for each of the full line of Cine-Kodak lenses. Finders snap onto the turret.

Improvements in the peepsight are such that the sight can now be adjusted to correct for parallax at film-to-subject distances ranging from 2 feet to infinity.

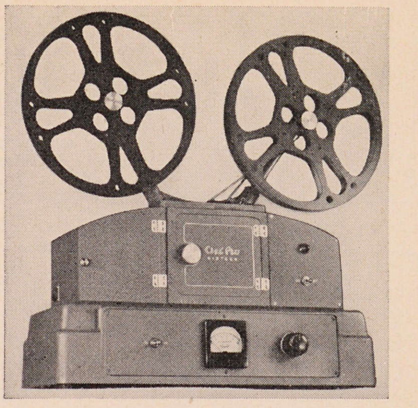
Owners of Cine-Kodak Special cameras who wish to have their cameras converted to the new model may do so through the Kodak Repair Department, it was announced.

The Cine-Kodak Special II camera is priced at $860, plus tax.

KEEPING UP WITH PHOTOGRAPHY

(Continued from Page 298)

minutes to remove the silver halide formed from the colloidal silver of the filter layer and from the fine-grained silver that was produced as fog in the first developer without removal of the silver halide of the sound-track of picture records. This treatment produces clean highlights for the sound track record. The sound-track is then redeveloped for about 15 to 30 seconds by edge application of a strong black-and-white developer. A final fixing for about 2 minutes completes the treatment of the film.



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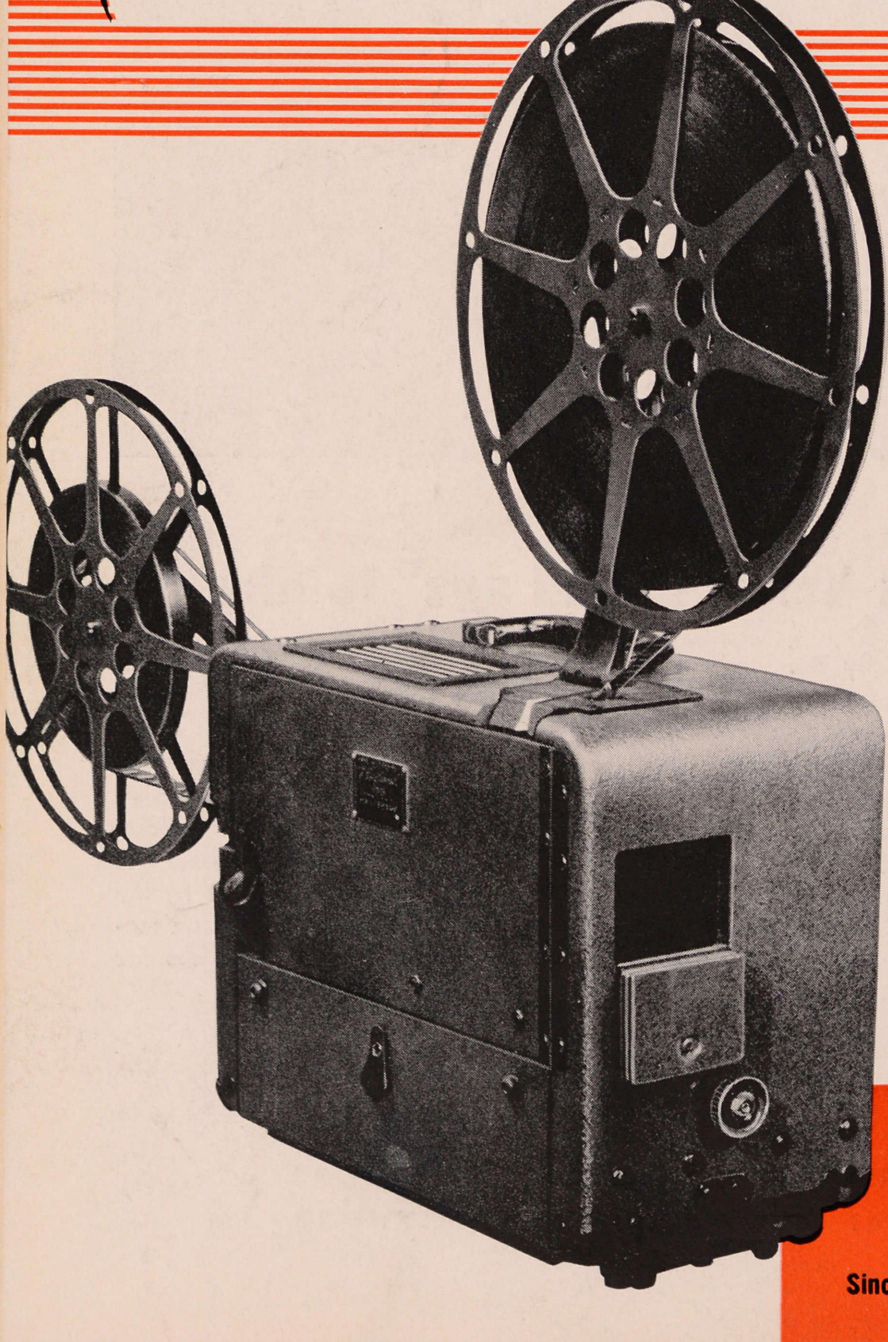

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